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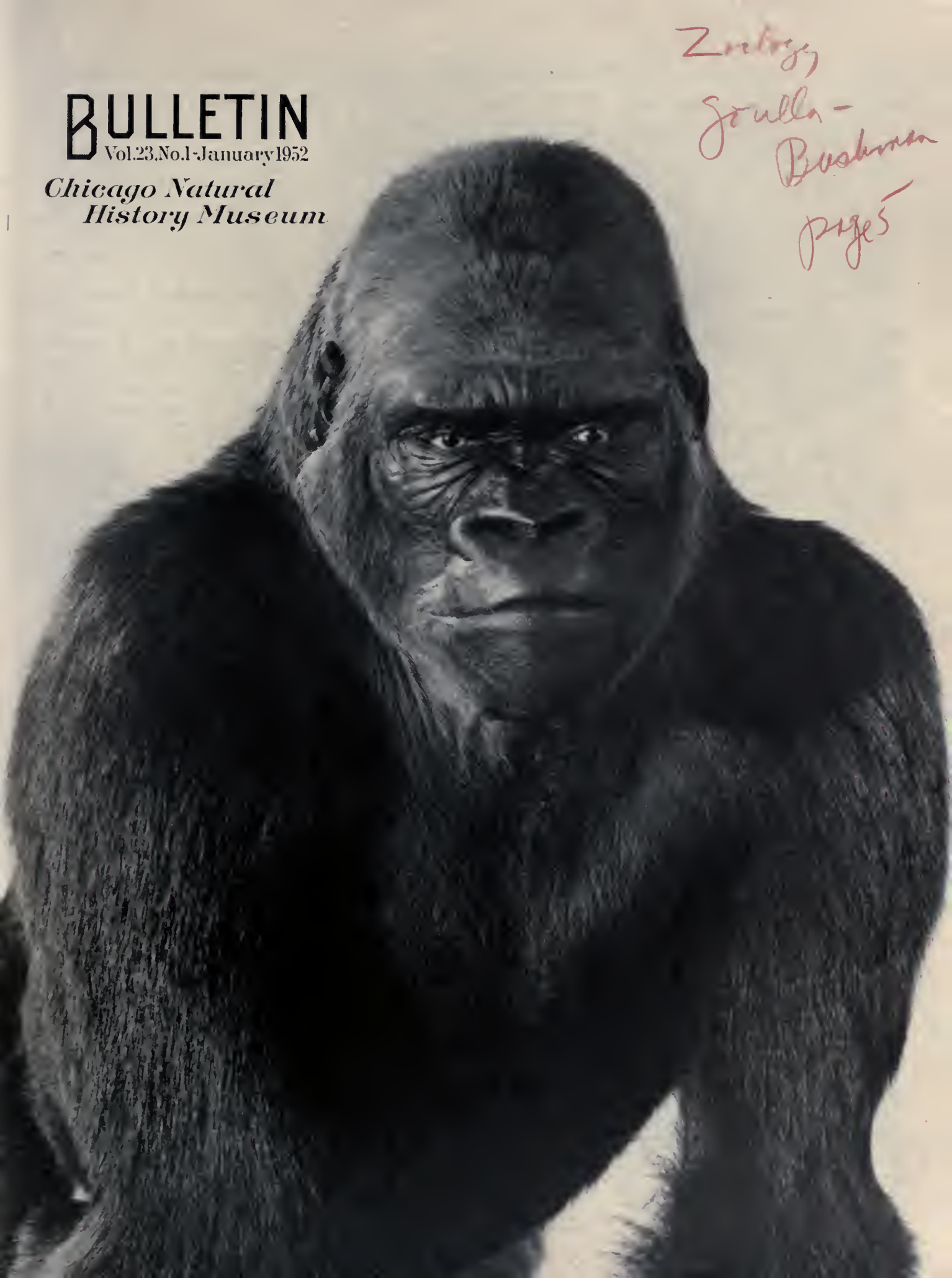
Chicago Natural History Museum



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Members are requested to inform the Museum promptly of changes of address.

NEVER-ENDING SEARCH FOR OLDEST VERTEBRATES

As vertebrates ourselves we are naturally interested in the evolutionary history of this group but, unfortunately, the farther back we trace it in time, the less we know about it. When we come to the earliest vertebrate beginnings, presumably about 450 million years ago in the Ordovician or Cambrian period, little or nothing is known. It is not surprising, then, that very early vertebrates are highly prized.

The honor of possessing the earliest vertebrates was first held by Great Britain. Fragments of the armor of fish-like forms were described in 1839 from the Ludlow bone bed, near the top of the series of Silurian rocks in western England. Some twenty years later, when still earlier remains were described from the lower part of the Ludlow series, rival claims from northern Europe were beginning to appear. Finally in 1884 the British had to relinquish reluctantly their claim to possess the earliest vertebrates when Professor Edward W. Claypole described some armored, fish-like members of the group from the Silurian red sandstones of Pennsylvania. Some of these fossils were from rocks of about the same age as the British Ludlow, but others were much farther down in the Silurian.

Professor Claypole was rightly proud of his discovery, as is indicated by the many papers he published concerning it, both in this country and abroad. But his glory was short-lived, for in 1892 the astounding discovery of fragments of vertebrates in the Ordovician rocks of Colorado was announced by Charles D. Walcott of the United States Geological Survey. This extravagent claim was more than many paleontologists were willing to accept. Claypole, jealous of his own position, was not convinced for some time that these were truly vertebrates. European scientists accepted the vertebrate nature of the fragments, but believed that they belonged to much later Devonian fishes. Some went so far as to propose preposterous geological explanations to account for the position of what they believed to be Devonian fishes underlying rocks of Ordovician age. But Walcott's claims were substantiated, and today the Late Ordovician age and the vertebrate nature of these fragments is generally accepted.

What have the Russians been doing about this? Have they missed an opportunity to claim another "first"? Apparently they have, for as early as 1889 "fishes" were described from Early Ordovician rocks near Leningrad (then St. Petersburg). Many of these "fishes" are conodonts, tooth-like structures perhaps belonging to some invertebrate, and maybe for this reason the record has been overlooked by most paleontologists. But associated with the conodonts are a few tooth-like fragments made of dentine and thus unmistakably belonging to a vertebrate. This is an occurrence that should be confirmed, for it is older than the one in Colorado.

Because of the rarity and poor preservation of very early vertebrates, the origin of the group is still an open field for speculation. Better fossils are needed and every effort is being made to obtain them for Chicago Natural History Museum. In 1949 collections were obtained from Walcott's locality, and in 1951 Claypole's sites were visited. New occurrences are always being sought, and it is to be hoped that some day a lucky find will extend our knowledge of our own very remote ancestry back to Ordovician or perhaps to Cambrian times.

ROBERT H. DENISON
Curator of Fossil Fishes

THIS MONTH'S COVER

This is the face that has seen more human beings than any other gorilla. The late Bushman saw about three million people a year for twenty years and seemed to find them as interesting as they found him. Although he did not try to attract attention, he did show his resentment by sulking when his neighbors had a larger audience than he. This is why, during his first illness in the summer of 1950, he was allowed to have visitors. It was felt by those who knew him best that isolation would definitely hinder and not help his recovery. Bushman is now to be seen in Chicago Natural History Museum.

Story on page 5

NEW WRITER APPOINTED TO MUSEUM STAFF

Effective January 1, 1952, Miss Christine Tardy has been appointed as Assistant in Public Relations at the Museum, it is announced by Colonel Clifford C. Gregg, Director. In this capacity she will be associated with H. B. Harte, Public Relations Counsel of the Museum for nearly twenty-five years, in the expanding activities of press relations and in the editing and operation of the BULLETIN.

Christine Tardy

Miss Tardy has been working at the Museum during a pre-appointment period that began November 2. She was formerly engaged in publicity work for Goodwill Industries, an organization for the aid of the handicapped. She has also had experience in the press relations work of other social agencies and of a number of art, ballet, and radio organizations.

A graduate of the University of Chicago, Miss Tardy has always manifested a special interest in and knowledge of the fields of science falling within the scope of this Museum and has aimed for a career in connection with them. The result of her first assignment as a reporter for the BULLETIN appears in this issue under the heading "Fabrics and Fashions—from 2000 B.C. to A.D. 1952" (*see page 3*).

Audubon Society Lecture On Saturday, Jan. 26

The Illinois Audubon Society will offer its second lecture of the current season on Saturday afternoon, January 26, at 2:30 o'clock, in the James Simpson Theatre of the Museum. The lecturer, Mrs. Lucie Palmer, who is well known as artist, geographer, and photographer, will illustrate her talk on "Underwater Kingdom" with color movies of strange submarine life. The lecture is free and the public is invited. Members of the Museum and of the Illinois Audubon Society are entitled to seats in the reserved section of the theatre upon presentation of their membership cards to the ushers.

FABRICS AND FASHIONS—FROM 2000 B.C. TO A.D. 1952

IN THE ANIMAL WORLD the finery goes to the males, but women have turned the tables on men almost all over the world. Now the standard fabrics—silk, wool, and cotton—are gradually giving way to modern synthetic products, our Bulletin reporter finds. But if all should vanish, there would still be preserved examples of the finest weaves of all ages and all lands in the Museum's "library" of textiles. Further, the designs of these old materials would continue to serve as inspiration to the artists working in the new media as they do today to those of the present textile industries.

By CHRISTINE TARDY.

THE TIME is fast approaching when the methods of synthetic cloth-making devised by science will be available to everybody all over the world, with the result that the time-honored use of animal and vegetable fibers, with all the intricate weaving techniques, may become lost skills. Our century is beginning to see miles of synthetic fabrics rolling out of the mills, and nylon is replacing silk. Ingredients such as coal, air, water, and petroleum are being used to make cloth instead of the more costly wool and cotton. Aside from cost considerations, the synthetic chemical fibers and fabrics often excel the animal and vegetable fibers—in being insect-resistant and practically wear-proof, they defy the age-old complaints.

Our descendants may one day be amused at all the trouble their ancestors had to go to for a new coat, dress, or suit. Compared to whipping up a batch of synthetic fibers in an industrial laboratory, the old methods of shearing sheep and carding wool or raising cotton and running it through the gin will seem like cumbersome efforts. Even now sheets of cloth are coming off mill rollers like sheets of paper towels, so that weaving too is eliminated. It is likely, though, that the methods of weaving we inherited from people of centuries ago will continue to be used for pattern effects, although a machine now does the weaving instead of the hands.

Partly against a future when our animal-vegetable fabric materials and techniques have become obsolete and forgotten, but of equal ethnic and artistic value now, is a recently established "library" at Chicago Natural History Museum. This unusual library has no books in it at all. It is a library of fabrics—shelves full of cloth from all over the world, ranging from very ancient times to the present. Huge custom-made steel cabinets, especially designed for storing fabrics are arranged row on row. The trays within the cabinets can be taken out to study the cloth. Grandma's mothballs have been replaced with the latest development in anti-insect preservatives, and the cases are dust-proof to ward off rapid deterioration of the fabrics from the city's dust.

The 10,000 pieces of cloth in the fabric library are filed *not* according to the Dewey Decimal System, but according to the area from which they come and the people who made and used the materials. One section is filled with prehistoric pieces of cloth and another section is devoted to ethnological pieces from more recent cultures. The largest groups of fabrics are from the indigenous cultures of both the North and South American continents, the Far East, Oceania, Africa, and ancient Egypt. Of the contemporary cultures, the best and most extensive collections are of fabrics from the American Indians of the Northwest Coast and the American Southwest, Mexico, and the highlands of South America. Of materials both ancient and contemporary, Indonesia, China, and India occupy the most shelves. The very old fabrics are mainly from Egypt and Peru. In the ancient Egyptian section of the "library" are to be found linen strips used to wrap mummies 4,000 years ago, while Peru contributes some of the finest fabrics found anywhere, dating from 200 B.C. on. Everything in the "library" was brought back by Museum expeditions, and contributions from other sources are not encouraged because there is no difficulty in obtaining pieces. The problem is to make the most effective use of what the collection already contains.

"The way the textile library is set up, it can be made available for research only," says Dr. Alexander Spoehr, Curator of Oceanic Ethnology, who is in charge of the "library." "Since the fabrics are not displayed as they would be in an exhibit, they are primarily of interest to textile specialists and designers."

The collection is by no means composed simply of scraps of cloth. There are Indian saris of the finest silk, delicately bordered with colorful embroidery. Filed away are entire costumes, such as gold-threaded harem outfits of filmy, transparent silks and heavy dragon-brocaded Chinese wedding gowns. Most of the fabrics are, in fact, pieces of clothing, but there is an almost equal abundance of containers—everything from medicine men's bags to pieces for holding the baby to his mother's back. The remainder is mainly blankets and bed clothing, tapestries, rugs, and ornamental material.

Browsing through this fabric library is almost like a trip in a time-machine, and there's no doubt about its being a travesty on space. You can see where a lot of our present habits of dress come from, and it's

VARIATION ON A THEME

Heavy silk robes, vividly embroidered, as worn by the aristocracy of China (standing, left), Japan (right), and Korea (kneeling).

SOME PEOPLE LIKE WOOL . . .
A Guatemalan lady spends a good deal of time over her embroidery.

fun to see some of the customs that our society never adopted or has long since rejected. The bridal gown idea is one of the oldest, and remote cultures go right along with Western civilization in the custom of going to considerable trouble for one lovely gown that is worn once and then put away, perhaps never to be worn again.

One of the apparent and easy concepts to trace in clothing customs is that which is found in nearly every modern and ancient culture throughout the world, with very few exceptions. That is the custom of using dress to indicate social status and occupation. It is still possible to pigeonhole yourself, or to cause others to pigeonhole you, according to the way you are dressed. A man in overalls is a farmer. Someone in blue jeans is either a student or a factory worker. There are women who can tell at a glance how much another woman paid for her dress and where she bought it. If you can afford it, you can dress yourself to fit the part of almost any role, whether countess or sea-captain.

But it is the fact that certain manners of dress are associated with certain ranks or positions in society that can be traced as a very old and widespread idea. Until the attempts at abolishing India's caste system were instituted, there was never the slightest question about who belonged to which caste, for it was immediately apparent from the manner of dress, the drape of the sari, and the set of the turban—effectively enforced by social pressure.

Going through the "library" at random, you can't help being struck with the ingenious variety of materials called upon to produce fibers for fabrics, as well as the vast number of techniques for turning the fibers into cloth. Every known way of weaving is represented in the collection. According to Dr. Hugh C. Cutler, Curator of Economic Botany, fibers are obtained from the bark of trees, from grasses and leaves, from plants like cotton and flax, from the hair of sheep, llamas, and buffalos, and from silkworms. The peoples of China and India obtained fiber from a shrub that was made into a cloth called *ramie*. It had a gummy quality to it, but it served them until the cotton gin made cotton cloth abundant. Hemp provided the fiber for most of our early ancestors' clothing, while linen, cotton, and wool were sufficiently

. . . WHILE OTHERS LIKE SILK . . .
A silk sari for the aristocratic Hindustani, woven with gold.

costly to be saved for Sunday best. In general, people have utilized the fiber materials that were handiest to them. The South Sea islanders, for instance, made all of their clothing from grasses, bark, and leaves until trade routes made other materials available and missionaries' ideas on morality foisted clothing conceived in temperate zones onto the backs of peoples in tropical areas.

The "library" is a storehouse of ideas for textile designers, for the proud inspirations of centuries of craftsmen and artists are preserved there. Some of the "newest" contemporary abstract and geometrical patterns seen on store counters today have their strikingly similar counterparts in the patterns found on very old or remote pieces from Africa, the American Indian, and Southeast Asia. Curiously enough, the weaving abilities of some New World peoples were equal to if not superior to anything found in Old World cultures. The ancient Peruvian Indians in particular developed one of the highest degrees of textile skill found anywhere. Unbelievably fine knitting and mesh work, exquisite tapestries, and a remarkable variety of techniques for making designs in cloth were created by these people. Some fine examples of these can be seen in James Nelson and Anna Louise Raymond Hall (Hall 4—Indians Before Columbus). However, people throughout the world found all of the ways to impress designs into fabrics, sooner or later, whether by weaving in different colors of fibers, painting, brocading, embroidering, or dyeing in various ways. The human love of decoration is responsible for all this endeavor that has gone into adorning the garments we must cover ourselves with if we are to stay warm and keep out of jail.

Nature frequently makes her male creatures resplendent with color and beautiful decoration. The male peacock so outshines the drab female that the unknowing suspect the two to be of different species. This beauty makes the male an attractive object of love-interest for the female, while her muddier color scheme helps to protect her from hazards by blending her in with the environment.

. . . AND SOME PREFER COTTON
The latest thing in Florida wear, if you're a Seminole Indian: colored strips on white cotton.

Things have been reversed almost everywhere, however, by modern mankind. In our society, the modern female is the one bedecked with colorful plumage, while the drab male limits himself to an almost concealed burst of brilliance in his necktie. There are, though, a few places in the world where it is the man who decks himself out with riotous displays of ornament, while the lowly female sticks to not-so-noticeable décor.

HOME TRAINING OF YOUNG BY BIRD PARENTS

By AUSTIN L. RAND
CURATOR OF BIRDS

A new exhibit in Boardman Conover Hall (Hall 21—Birds of the World) shows stages in the growing up of three kinds of young birds that have very different types of infancy.

The young sparrow at hatching is a blind, nearly naked little thing. It is almost helpless, able to do little but keep right side up and to open its mouth wide and hold it

FINAL TOUCHES

Installation of the exhibit illustrating stages of the growth of young birds is completed by Assistant Taxidermist Carl W. Cotton (left) and Leon R. Aboulafia, under the supervision of Dr. Austin L. Rand, Curator of Birds (right).

up for the parent to stuff food into. This type of hatchling bird is referred to as altricial. It is only by a slow process of development and growth in the nest, during which it is cared for by the parents, that the young bird becomes a feathered creature, interested in the world about it, able to hop and fly, and later, when it leaves the nest, to feed itself.

On the other hand the young quail, when it hatches from the egg, is down-covered, has its eyes open, and is shortly able to run about and pick up food for itself as it follows the parent. Such juvenile birds are said to be precocial.

'HOME TRAINING'

The young quail at hatching is in a stage of development comparable to that of the young sparrow when it leaves the nest. Both may be under the care of the parents for a time, during which the young bird, influenced by the adult, may seek food in certain places and shelter in others and may learn to avoid certain enemies. Thus a certain amount of "teaching" and "learning" takes place, a process that eliminates many of the errors in the trial-and-error learning through which the young bird becomes adjusted to its environment.

The sparrow is representative of altricial birds and the quail of precocial, but there are birds whose development and behavior are intermediate between that of the infancy of these two. The common tern illustrates this. The young are down-covered at hatching and soon are able to run about, but for a long infancy they depend on their parents for food.

There are many other variations of these three main types of behavior. The altricial young of petrels are hatched in a dark burrow underground, where they are cared for by the parents until nearly full-grown and very fat. Then the parents desert them. The young in their subterranean burrow complete their fledgling period by living on their fat and, after perhaps weeks unattended by parents, they come out of their nest burrow all alone into a world they have never seen, fly away over a sea they have never before known, and quite without parental guidance take up a way of life that is characteristic of the species.

THEY GO IT ALONE

Equally remarkable is the mound builder, or megapod, that buries its eggs and has them incubated by the heat of the earth. The young of these birds at hatching are fully clothed with down and feathers, are able to fly shortly, and are completely independent of their parents, with whom they have nothing to do. The fact that the young megapod and the young petrels venture out all alone into a world that is new to them and behave appropriately is a good indicator of how well developed is the instinctive behavior of these species.

This exhibit, planned in the Division of Birds, was begun by Kenneth Woehlck, formerly Assistant Taxidermist on the Museum staff, and was completed by Carl W. Cotton, Assistant Taxidermist, with the aid of Leon R. Aboulafia of Tel Aviv, a special student from Israel. Mr. Aboulafia, who was in Chicago Natural History Museum studying museum methods, returned last year to his country where he will put into effect the techniques learned here.

NEW MEMBERS

The following persons became Museum Members from November 15 to December 14:

Associate Members

L. Martin Krautter, Mrs. John T. McCutcheon.

Sustaining Members

Edgar J. Uihlein, Jr.

Annual Members

Edwin Goff Cooke, Samuel E. Entsminger, Herman M. Finch, Mrs. David S. Frank, W. P. Frye, J. Leslie Hart, Russell P. Hughes, Ross H. Kidston, Glenn Knotts, Rev. F. W. Lickfield, Wilson V. Little, Miss Agnes McGarry, Edwin Moll, Albert W. Paul, Richard L. Snideman, Bert Edward Sommers, Robert G. Williams.

Eskimo winters average 11 degrees below zero.

ZOO'S FAMOUS 'BUSHMAN' BECOMES OWN MONUMENT

By COLIN CAMPBELL SANBORN
CURATOR OF MAMMALS

BUSHMAN of Lincoln Park Zoo, who died a year ago, has been mounted for permanent preservation at Chicago Natural History Museum and placed on exhibition. He thus is in the unique position of becoming his own monument. This makes pertinent some observations on the subject of gorillas in general.

Published references to gorillas based mainly on stories of natives appeared as long ago as 1625. The gorilla was not again mentioned until 1819, and it was not until 1847 that any actual specimens came to the hands of scientists.

It was in that year that Thomas S. Savage, an American missionary returning from Africa, stopped at the Gaboon River with the missionary stationed there, Rev. J. L. Wilson, who showed him the skull of a gorilla. Dr. Savage, being familiar with the chimpanzee, recognized the skull as that of a new animal and with Rev. Wilson's help secured four skulls and some bones of the animal. Dr. Savage and Dr. Jeffries Wyman, Hersey Professor of Anatomy in Harvard University, studied this material and gave the world the first description of the animal, which they named *Troglodytes gorilla*. The name gorilla was taken from the account of Hanno, who, in his account of the Carthaginian explorations, described "wild men" found on the coast of Africa.

Since the original discovery, and with the further exploration of Africa, no less than seventeen other supposed types of gorillas have been described, each one from a new locality being thought to be different. However, with a greater amount of material available for comparison, the supposed distinguishing characters proved to be merely normal variation in the species. Today only two kinds of gorillas are recognized—the coast gorilla, *Gorilla gorilla gorilla* Savage and Wyman, and the mountain gorilla, *Gorilla gorilla beringei* Matschie.

The coast gorilla is found in that part of West Africa known as the Cameroons and French Equatorial Africa. The mountain gorilla lives in a narrow strip of highland forest, usually about 7,000 feet above sea level, in the eastern Belgian Congo.

WEIGH UP TO 350 POUNDS

Both gorillas are large animals, old males standing about six feet and in the wild weighing 350 pounds or more. The girth of the great chest is 63 to 64 inches, or more than five feet. The powerful arms have a girth of 18 inches and a length of 34 inches and the distance from finger tip of one arm to finger tip of the other is about eight feet. The mountain gorilla differs from the coast gorilla by its longer and thicker coat, which

is darker in color, by the presence of a beard, by a callosity on top of its head, and by its shorter arms and longer legs.

The first white man to shoot a gorilla was the well known French-American author, Paul du Chaillu, who went to West Africa in 1855. His highly colored account, for which the publishers are to be blamed, continued many of the myths by which public interest had been captured. In spite of all that has been published since, it is still believed by many that the gorilla walks upright, lives in trees, attacks hunters, and carries off women. The latter story is still being used by motion-picture producers to this day. Perhaps it is fortunate that they do not know the Malay story about attractive young Malay men being kidnapped and carried to their treetop nests by older female orangs.

It has been well established that the gorilla is a terrestrial mammal. It may rise on its hind legs, apparently in order to look over the top of bushes, but it does not travel in this erect posture. It moves on all fours, the arms resting on the knuckles of the hands, not flat on the palm. A study of the structure of the gorilla shows that it is not built to walk in an upright position.

IT 'NESTS,' BUT ON GROUND

The gorilla may ascend a leaning tree, but it does not climb nor does it travel from tree to tree by swinging from its arms. Its bed, also, is made on the ground and is never a nest of sticks in trees as so often described. The animal turns about to make a hollow in the ground and pulls into it for a bed such leaves, sticks, or vines as may be on the forest floor. New nests are made each night.

Gorillas associate in family groups composed of males, females, and young, with as many as twenty-five individuals living together. There are conflicting stories by reliable observers concerning their reaction to the presence of man in their immediate vicinity. The rule appears to be that when approached the group will move off, but if followed, old males will show more or less fight, depending on the individual. In other words, offered enough provocation a gorilla will make some show of defiance, barking, beating its chest, and even charging to within a certain distance of its pursuer. Edmund Heller, the well-known African collector, says in his field notes on the large male mountain gorilla he shot for this Museum, "Solitary old male which lived in second bush or old bamboos. Hunted for three days and charged hunters 20 times or more." From this it can be seen that had the animal been charging to attack, it would have been shot on the first charge, but it appears that even in "20 charges or more" it did not approach the hunters close enough for a good shot.

Gorillas are strictly vegetarians. The mountain gorilla feeds largely on stalks of giant wild celery and the sweet pithy centers of bamboo. Heller noted the stomach contents of the one he collected as "soft white heart of young bamboo plants and green leaves of some tree or shrub." Although there is no exact data on the food of the coast gorilla, it is also known to be a vegetable eater.

The man-like apes, which include the gorilla and chimpanzee of Africa, and the orang-utan and gibbon of Asia, being closer to man in the evolutionary scale than other mammals, have been of intriguing interest in regard to their intelligence. Many have been kept in captivity, both for study and for exhibition in zoos and circuses. A recent survey shows 40 gorillas now living in captivity in the United States (23 males, 17 females), and of these but seven are over five years of age. Eight are resident in the Chicago region—four at Lincoln Park Zoo, two at the Brookfield Zoo, and two in the Milwaukee Zoo. There is but one mountain gorilla in captivity in the United States, Somaili of the New York Zoological Park.

From the few gorillas that have been studied in captivity it can be said that they do show a certain degree of intelligence. They appear to be as individual as human beings, and the treatment they receive undoubtedly has a controlling influence on whatever powers of reasoning they may develop. Some young gorillas show the capability to learn but are not so quick as certain chimpanzees. They do recognize individuals, even after some lapse of time.

It is certain that gorillas need special and individual care and grow and thrive best when this is provided. The late Bushman of Lincoln Park Zoo in Chicago is an outstanding example. His birth is estimated at January, 1928, and he was received by the zoo in August, 1930. He died on January 1, 1951, at the approximate age of 23 years. This is close to the record age for a gorilla, but chimpanzees and orang-utans have lived in zoos for slightly more than 26 years.

Bushman was a coast gorilla from the French Cameroon, raised from a baby by Dr. W. C. Johnson, a missionary at Yaounde. He was acquired by Jules L. Buck, animal collector, and sold to Lincoln Park Zoo for $3,500 in 1930, at which time he weighed but 38 pounds. Keeper Eddie Robinson, by his love, understanding care, and firm hand, raised Bushman to his prime when he stood 6 feet 2 inches, weighed 550 pounds, was valued at from $125,000 to $250,000, and was voted by the American Association of Zoological Parks and Aquariums "the most outstanding and most valuable single animal of its kind in any zoo in the world." This is an achievement and sets a record that will long stand.

HE LIKED SPORTS

Bushman was not given special training or taught tricks. Neither was he subjected to psychological studies. Keeper Robinson took Bushman outside for exercise at the end of a 75-foot rope nearly every morning for four and a half years. Wrestling, racing, and football were sports at which Bushman became adept, but he was never offered a place on any team. He was always obedient and as gentle as a six-year-old 170-pound

(*Continued on page 8, column 1*)

STAFF NOTES

Dr. Alexander Spoehr, Curator of Oceanic Ethnology, was chairman of the program committee for the 50th anniversary meetings of the American Anthropological Association held recently in Chicago. **Donald Collier,** Curator of South American Ethnology and Archaeology, was chairman of local arrangements, and **George I. Quimby,** Curator of Exhibits, was liaison representative of the Society for American Archaeology. The meetings were attended by **Dr. Paul S. Martin,** Chief Curator of Anthropology, **Dr. John B. Rinaldo,** Assistant Curator of Archaeology, **Miss Elaine Bluhm,** Assistant in Archaeology, and **Roger Grange,** assistant in the Department of Anthropology. Dr. Martin recently gave his movie-lecture, "Indians Before Columbus," before an audience at the Winnetka Historical Society.

Dr. Theodor Just, Chief Curator of Botany, recently conducted a seminar on "Mesozoic Floras and Their Biological Significance" for the Department of Biology at Northwestern University.

Robert K. Wyant, Curator of Economic Geology, attended the annual meetings of the Geological Society of America in Detroit .... **Bryan Patterson,** Curator of Fossil Mammals, **Dr. Rainer Zangerl,** Curator of Fossil Reptiles, **Dr. Robert H. Denison,** Curator of Fossil Fishes, and **Dr. Everett C. Olson,** Research Associate in Vertebrate Paleontology, attended the meetings of the Society of Vertebrate Paleontology (held concurrently with the meetings of the Geological Society of America) and presented papers.

Dr. Fay-Cooper Cole, Research Associate, Malaysian Ethnology, is conducting research at the Museum on ethnological collections representing the Bukidnon peoples of the Philippine Islands. Dr. Cole collected this material years ago while leading a Museum expedition. It will be the subject of a publication.

Celestino Kalinowski, of Marcapata, Peru, who has been collecting for the Museum in Peru for the past three years, has recently joined the staff in the Division of Taxidermy.

MUSEUM DRAFTS A PROGRAM OF EXPEDITIONS FOR '52

A program of 22 expeditions, both in the United States and abroad, has been set up for 1952, it is announced by Colonel Clifford C. Gregg, Director.

One of the more interesting undertakings planned is an expedition by the Department of Botany to the "Lost World" area of Venezuela. This section of South America, near Venezuela's borders with Brazil and British Guiana, is practically unknown botanically, and it is expected to be extremely productive of desirable material for addition to the Museum's collections. Dr. Julian A. Steyermark, Curator of the Herbarium, will be in charge. The expedition will leave some time in the autumn.

Dr. Paul S. Martin, Chief Curator of the Department of Anthropology, will again head an archaeological expedition to the Southwest. This will be the eighteenth year in which this work, always one of the largest-scale operations, will be conducted. Dr. Martin will head a party of archaeologists and other helpers from the Museum staff, and they will be assisted by a number of outsiders. Excavations of sites of prehistoric culture in New Mexico will be continued. Work will begin in June.

Dr. Sharat K. Roy, Chief Curator of the Department of Geology, will go to Mexico in the summer to engage in studies at the famous recently-erupted volcano Parícutin. Dr. Rainer Zangerl, Curator of Fossil Reptiles, will leave in June for Austria on an exploratory trip that may be followed by further expeditions at a later date. Robert K. Wyant, Curator of Economic Geology, will collect ore specimens in Utah during September and October. Dr. Robert H. Denison, Curator of Fossil Fishes, will seek specimens in Pennsylvania, New Jersey, and New Brunswick in June and July. Bryan Patterson, Curator of Fossil Mammals, who recently was awarded a John Simon Guggenheim Fellowship, will go to Argentina in January to follow up studies begun years ago by the series of South American expeditions sponsored by Marshall Field, Trustee and First Vice-President of the Museum. Orville L. Gilpin, Chief Preparator of Fossils, and William D. Turnbull, Preparator, will continue fossil-collecting in Texas, beginning in April, work that has been under way during two past seasons. Eugene S. Richardson, Jr., Curator of Fossil Invertebrates, and George Langford, Curator of Fossil Plants, will continue local collecting in their respective fields in various areas of Illinois and Indiana.

Karl P. Schmidt, Chief Curator of the Department of Zoology, will continue herpetological researches in Texas. Henry S. Dybas, Associate Curator of Insects, will collect beetles in the southwestern areas of the United States. Clifford H. Pope, Curator of Amphibians and Reptiles, will make collections in Mexico. An ornithological survey of Mexico will be conducted by Emmet R. Blake, Associate Curator of Birds. Colin C. Sanborn, Curator of Mammals, will collect in Arkansas, and Dr. Fritz Haas, Curator of Lower Invertebrates, will make two collecting trips, one to Cuba and one to Florida. The Department of Zoology will have three collectors outside its own staff on expeditionary work: D. S. Rabor, of Silliman University, collecting birds and mammals of the Mt. Dapiak region in Zamboanga, Philippine Islands; Luis de la Torre, of the University of Michigan, collecting mammals in Guatemala; and Harry A. Beatty, of New York, collecting birds in West Africa (work already under way). Philip Hershkovitz, Assistant Curator of Mammals, who has been collecting in Colombia for several years past, will conclude his work there and return to the Museum sometime in the spring of 1952.

Dr. B. E. Dahlgren, Curator Emeritus of Botany, will resume the studies of Cuban palms in which he has been engaged for a number of years. Dr. Margery Carlson, well-known botanist of Northwestern University, plans to do some collecting on behalf of this Museum during the course of an expedition she is to make to southern Mexico and Honduras.

DALLWIG TO LECTURE ON LIVING RACES

Each Sunday afternoon in January, Paul G. Dallwig, the Layman Lecturer, will talk on "Living Races and Their Way of Life." In each of these lectures (they are identical, *not a series*) Mr. Dallwig will take his listeners on an imaginary trip around the world, in the course of which they will meet representatives of all the principal races inhabiting the globe today. To illustrate his subject Mr. Dallwig will include a tour of Chauncey Keep Memorial Hall (Hall 3) in which are displayed 101 famous bronze racial portraitures by the noted sculptor Malvina Hoffman.

Members of the Museum may use their membership cards to attend these lectures without advance reservations. All others, with the exception of accredited representatives of the press, must make reservations in advance. Reservations may be made by mail or telephone (WAbash 2-9410). The lectures are free. They start promptly at 2 P.M. and end at 4:30 P.M., including a half-hour intermission for relaxation or for tea or coffee in the Museum cafeteria, where smoking is permitted.

During February, Mr. Dallwig will be on an out-of-town lecture tour and will not appear at the Museum. He will resume his lectures here in March, when his topic for the five Sundays in that month will be "Money Does Grow on Trees," the story of our American forests.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From the *Annual Report of the Director* for the year 1901:

"*Taxidermy and Laboratory Work.*—Laboratory work has been of an exceptionally effective character, and the taxidermists have had a busy and productive year. The magnificent group of Virginia deer exposed

VIRGINIA DEER, SPRING GROUP

to the public about ninety days ago seems to mark the highest point that has been reached in the contribution of scientific illustration upon popular lines. While this group has not, of course, been inspected by the critics at home and abroad whose opinions are of the highest desirability, yet enough is known of their opinion of this piece of scientific art to flatter even so diffident a temperament as that of its creator, Mr. [Carl E.] Akeley."

[This refers to one of the "Four Seasons" groups of the Virginia deer that now stand at the entrance to Richard T. Crane, Jr., Hall (16), American Mammals.]

LAST CALL FOR ENTRIES OF NATURE PHOTOS

With the deadline set for January 14, the Nature Camera Club of Chicago has issued its final call for entries in the Seventh Chicago International Exhibition of Nature Photography to be held at Chicago Natural History Museum, February 1 to 28.

The contest is open to all persons interested in nature photography, whether they are professionals or amateurs. There will be two main divisions: Monochrome or Color Prints and Color Transparencies. Each of these includes three main classifications: *Animal Life*, *Plant Life*, and *General*. In the last classification are included geological phenomena, scenery, and all other nature manifestations that do not fall within the specific classifications. In each unit of each division silver medals and ribbons will be awarded.

MUSEUM RECEIVES HEAD OF ANTLERED DOE

W. Robert McKee of Chicago has presented to the Museum a fresh specimen of the head of an antlered female white-tailed deer that he killed in Ontario, Canada, early in November. The occurrence of antlers

DOE WITH ANTLERS

It is unusual, but not altogether infrequent, for the female deer to be thus arrayed.

in a doe has been noted before, but it is not common, and this is the first specimen to come to this Museum. The spikes are about seven inches long and are unusual in that they are covered by skin and hair rather than velvet as reported in most antlered does. The doe had been in excellent health. It was fat and weighed about 240 pounds. Examination showed that it had given birth to a fawn this year. The exact cause of antlers appearing in a doe is not definitely known but they might be caused by some endocrine disturbance. —C.C.S.

'BUSHMAN' AT MUSEUM—

(Continued from page 6)

gorilla could be expected to be. The time soon came, however, when Bushman did not want to return to his cage. A slap in the face from Robinson caused him to dash for the monkey-house and across the basement, dragging Robinson with him. After some petting he returned to his cage, which he was never allowed to leave again.

He still obeyed Robinson's commands, would sit on his chair, which was on scales so that a record of his weight could be kept. He liked to be fed by hand through the bars and at no time became ill-tempered or vicious.

His personality appealed to the public and an estimated three million people came to see him every year. News of his first serious illness in 1950 brought 120,000 sympathizers in one day to call on him. His only fears were of snakes, turtles, and crocodiles.

On his death the Chicago Park District presented him to Chicago Natural History Museum where he was preserved for posterity in a life-like position by Staff Taxidermists Leon L. Walters and Frank C. Wonder, and Artist Joseph B. Krstolich. For a month he was returned to the monkey house, a part of which was dedicated with fitting ceremonies on October 19 as Bushman Hall. He has now been returned to the Museum. Temporarily he is exhibited in Stanley Field Hall and later will be permanently installed in Carl E. Akeley Memorial Hall (African Mammals—Hall 22).

"The King is dead, long live the King." There are three princes and one princess at Lincoln Park Zoo vying for Bushman's place in the public's heart—Sinbad, Rajah, Irvin Young, and Lotus. Each has a different personality and appeal; so it may be very difficult to decide. None can take Bushman's place. They can only carry on his tradition.

The coast gorillas in the wild are rapidly losing their territory to man. New settlers have made great changes by clearing the land, and the killing of adult gorillas, either because they raid the plantations or in order to capture the young, will inevitably reduce their numbers so that in time the animal may disappear. The mountain gorilla, of which only a few hundred are thought to exist today, receives protection from the Belgian government, and there is hope that it may continue in small numbers for a long time.

GIFTS TO THE MUSEUM

Following is a list of the principal gifts received during the past month:

Department of Anthropology:

From: Francis E. Manierre, Chicago—2 carved wood staffs of African chieftains.

Department of Botany:

From: Dr. Aylthon Brandao Joly, Ann Arbor, Mich.—42 algae, Brazil; Dr. Leon F. Kock, Bakersfield, Calif.—57 mosses, California; Missouri Botanical Garden, St. Louis—160 phanerogams, Colombia; Dr. C. S. Nielsen and Dr. Grace C. Madsen, Florida State University, Tallahassee—409 algae, Florida, Alabama, and Mississippi; Science Museum, Jamaica, British West Indies—72 algae, Jamaica; Floyd Swink, Chicago—198 phanerogams, Indiana and Illinois; U. S. Department of Agriculture, Washington, D.C.—179 phanerogams, Colombia; Dr. Cesar Vargas C., Cuzco, Peru—30 algae, southern Peru.

Department of Geology:

From: University of California, Berkeley—collection of fossil fish; Mrs. Samuella Crosby, Chicago—two pieces of Indian jewelry, India; Alma C. Walker, Spokane, Wash.—18 fossil leaves, Payette formation, Miocene.

Department of Zoology:

From: Harvey R. Bullis, Jr., Pascagoula, Miss.—a lot of deepwater scallops, Gulf of Mexico; Dr. Sidney Camras, Chicago—339 flies, United States; Harry Hoogstraal, Cairo, Egypt—161 mammals, Eritrea and Egypt; Jack Hughes, Ocean Springs, Miss.—a fish (*Xirichthys*), Mississippi; Ralph Jackson, Cambridge, Md.—a lot of land shells, Ecuador; W. Robert McKee, Chicago—a white-tailed deer, Canada; Dr. Charles H. Seevers, Chicago—approximately 10,000 rove beetles of the tribe Gyrophaeni, United States; Joseph H. Shirk, Peru, Ind.—2 black bear skulls, Arizona; U. S. Fish and Wildlife Service, Pascagoula, Miss.—4 lots of fishes, Gulf of Mexico.

LECTURE TOURS IN JANUARY DAILY EXCEPT SUNDAY

Tours of exhibits, under the guidance of staff lecturers, are conducted every afternoon at 2 o'clock, except Sundays and certain holidays. On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given covering all departments. Special subjects are offered on Wednesdays and Fridays. A schedule of these follows:

Wed., Jan. 2—Pageant of Winter (*Jane Sharpe*).

Fri., Jan. 4.—Jungle Life. Illustrated introduction in Meeting Room (*June Buchwald*).

Wed., Jan. 9—Green Magic: Story of the Plant Kingdom (*Marie Svoboda*).

Fri., Jan. 11—Natural Wonders: How Earth's Scenic Wonders Are Formed. Illustrated introduction in Meeting Room (*Anne Stromquist*).

Wed., Jan. 16—Life in Ancient Times: Egypt, Babylonia, Rome (*June Buchwald*).

Fri., Jan. 18—Natural Enemies. Illustrated introduction in Meeting Room (*Loraine Stephens*).

Wed., Jan. 23—Reading the Earth's Diary (*Anne Stromquist*).

Fri., Jan. 25—Animals in Action. Illustrated introduction in Meeting Room (*Jane Sharpe*).

Wed., Jan 30—Designs in Wood: Tree Growths That Result in Beautiful Patterns (*Miriam Wood*).

The Museum will be closed Tuesday, January 1, for New Year's Day.

Curator Quimby on Leave To Teach in Norway

George I. Quimby, Curator of Exhibits in the Department of Anthropology, has been granted a leave of absence for eight months to go to Norway where he will teach American archaeology and ethnology at the University of Oslo under a Fulbright grant awarded him by the U. S. Department of State.

Curator Quimby will sail January 12. While in Europe he will make a study of European anthropological exhibits and collections under a grant from the Axel Wenner-Gren Foundation for Anthropological Research. He will return to the Museum September 1.

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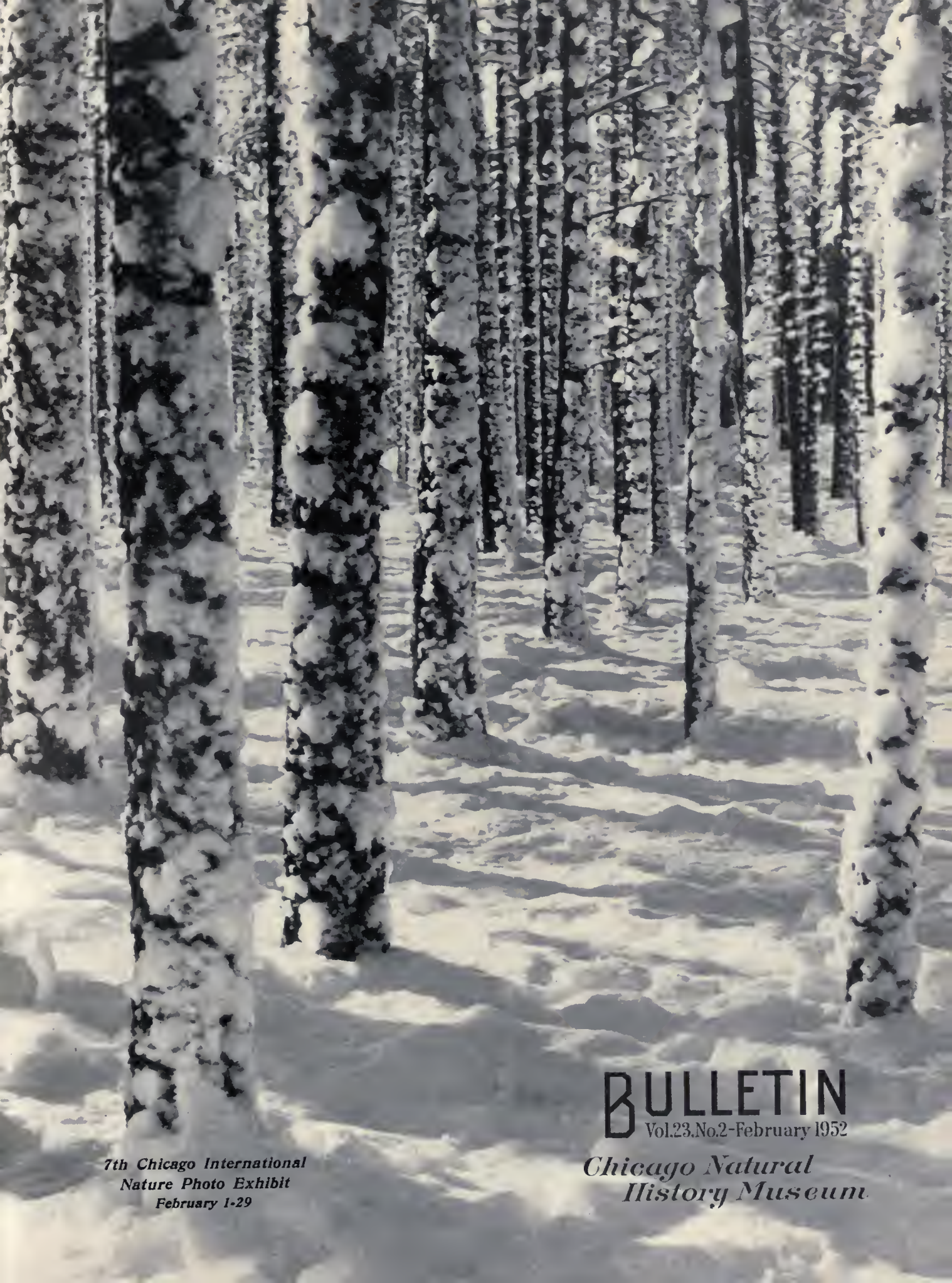

BULLETIN

Vol.23.No.2-February 1952

Chicago Natural History Museum

7th Chicago International Nature Photo Exhibit
February 1-29

Chicago Natural History Museum

FOUNDED BY MARSHALL FIELD, 1893

Roosevelt Road and Lake Shore Drive, Chicago 5

TELEPHONE: WABASH 2-9410

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Members are requested to inform the Museum promptly of changes of address.

MUSEUM ATTENDANCE RISES TO 1,251,752 IN 1951

The number of visitors received at Chicago Natural History Museum during 1951 was 1,251,752, a notable increase over the figure for the preceding year, which was 1,173,661. Of the visitors, an overwhelming majority, 1,118,412, were admitted without charge. This number included adults coming on the free days—Thursdays, Saturdays, and Sundays—and children, students, teachers, Members of the Museum, and officers and enlisted men of the armed forces in uniform, all of whom are admitted free on all days of the week. Only 133,340 persons paid the nominal admission charge (25 cents plus 5 cents federal tax) charged on other days.

It is interesting to note that when the attendance figures are weighed against the Museum's operating budget of approximately $1,000,000 a year, it is found that it costs the institution about 80 cents for each visitor benefiting from the Museum's educational facilities.

In addition to the more than a million and a quarter visitors who passed through the Museum's doors, hundreds of thousands of persons benefited from activities conducted outside the Museum's own building. These include approximately half a million school children to whom the Museum sends both traveling exhibits and lecturers with films and slides through the N. W. Harris Public School Extension and the James Nelson and Anna Louise Raymond Foundation. Many thousands more benefited from the free lectures for adults and free children's programs presented in the James Simpson Theatre, the daily guide-lecture tours, and the Sunday afternoon "Layman Lectures" by Paul G. Dallwig. Still others benefited by the extension to the public of the resources of the Museum's huge natural history library and the many publications both popular and scientific turned out by Chicago Natural History Museum Press as a result of the continual research projects being conducted both within the Museum and afield by the scientific staff.

TWO NEW TRUSTEES ELECTED TO BOARD

Louis Ware, President of International Minerals and Chemical Corporation, and John G. Searle, President of G. D. Searle and Company, manufacturing chemists, were elected to membership on the Museum's Board of Trustees at the Annual Meeting held January 21. They will fill the vacancies arising from the death of Boardman Conover and the retirement of Howard W. Fenton. Trustee Henry P. Isham was elected Second Vice-President to fill the vacancy caused by the resignation last year of Albert B. Dick, Jr. (Mr. Dick resigned this office but remained as a Trustee and member of the Executive and Finance committees).

Stanley Field was re-elected President of the Museum and now begins his 44th consecutive year in that office. All other officers were re-elected. They are: Marshall Field, First Vice-President; Samuel Insull, Jr., Third Vice-President; Solomon A. Smith, Treasurer; Colonel Clifford C. Gregg, Director and Secretary; and John R. Millar, Assistant Secretary.

STAFF NOTES

Karl P. Schmidt, Chief Curator of Zoology, recently spoke before the Conservation Council on the proposal to revive the project for establishing an Indiana Dunes national park.... **Dr. Paul S. Martin,** Chief Curator of Anthropology, recently attended a special meeting of anthropologists in Boston to discuss Southwestern prehistory, its terminology, and the correlation of all Southwestern archaeological projects.... **Dr. Theodor Just,** Chief Curator of Botany, has been appointed a member of the divisional committee for biological sciences of the National Science Foundation and attended its meetings in Washington, D.C., last month. He will lecture at Yale University in February on "Evolution of the Cycadophytes.".. **Dr. Julian A. Steyermark,** Curator of the Herbarium, has been re-elected president of the Barrington Natural History Society.

THIS MONTH'S COVER

"Pine Forest in Snow," reproduced on our cover, is the winner of the silver medal, first prize, in the Plant Life Section of the Seventh Chicago International Nature Photography Exhibition to be held at the Museum from February 1 to 29, inclusive. It was submitted by Anders Sten, of Vicka, Sweden, and with the many other photographs received from foreign lands, emphasizes the international character of this year's exhibit. The show, sponsored jointly by the Nature Camera Club of Chicago and the Museum, is the largest in the history of this annual event, with more than 3,000 pictures submitted, from which approximately 700 color slides and more than 200 prints (mostly black-and-white, with a few in color) were selected for exhibition.

February 23 Audubon Lecture On Canadian Birds

"Canada East," a "nature-logue" lecture accompanied by color films, will be given by the Illinois Audubon Society in the James Simpson Theatre of the Museum on Saturday afternoon, February 23, at 2:30 o'clock. Bert Harwell, noted naturalist and interpreter of bird songs, will be the lecturer. His films show gulls, terns, guillemots, owls, gannets, and other wildlife of the Maritime Provinces and the picturesque Gaspé Peninsula. The lecture, third in the current Audubon series, is free and the public is invited. Members of the Museum or of the Illinois Audubon Society are entitled to seats in the reserved section of the theatre upon presentation of their membership cards to the ushers. Two more lectures, to be announced later, will be given, in March and in April.

Benefactor, 3 Contributors Elected

Mrs. Stanley Field, wife of the President of the Museum, was elected a Benefactor of the institution by the Board of Trustees at its Annual Meeting held January 21.

For notable additions to the Museum's scientific collections, Mrs. Sherman C. Bishop, of Rochester, New York, Mrs. Daniel W. O'Dell of Ithaca, New York, and Dr. Charles H. Seevers of Homewood, Illinois, were elected Contributors. Contributors are those whose gifts to the Museum range in value from $1,000 to $100,000.

NATURE PHOTOGRAPHY EXHIBIT AT MUSEUM FEBRUARY 1–29

The Seventh Chicago International Exhibition of Nature Photography, a joint project of the Museum and the Nature Camera Club of Chicago, will open in Stanley Field Hall on February 1 and continue through February 29. From more than three thousand entries submitted by both amateur and professional photographers in all parts of the United States as well as in twenty foreign countries, the judges have chosen more than 200 prints and about 700 color transparencies for exhibition.

'OLD SOLDIERS'
By Howard Oberlin of North Canton, Ohio.
Awarded an honorable mention in the
Nature Photography Exhibition.

Early last fall, entry forms and notices began going out to amateur and professional photographers all over the world announcing the exhibition. Then in December the Museum workrooms used by the Exhibition Committee of the Nature Camera Club of Chicago began to buzz with activity. Judging took place on January 19 and 20, but before that big job could be undertaken, the Exhibition Committee worked nights and week-ends opening packages, sorting the hundreds of slides and prints that were submitted, and attending to all the time-consuming details connected with proper handling of the photographs.

The Chicago International Exhibition of Nature Photography is by far the largest of its kind in the world, and it is one of the three or four largest photographic exhibits of any kind—even by comparison with general photographic shows where there is no restriction of subject-matter. The exhibition originated in 1946, and the first show drew 1,750 pictures, of which 197 prints and 397 slides were accepted. Last year's show attracted a total of 2,850 pictures—550 prints and 2,300 color slides. This year there were more than 3,000 entries, the largest number since the exhibition was begun. The continued growth in size and importance of the exhibition is due entirely to the conscientious efforts of the Nature Camera Club; its president, H. G. Mitchell; the chairman of the Exhibition Committee, H. J. Johnson; and all the enthusiastic club members who assist.

Judges for the current exhibition were John Bayalis, chief of the Museum's Division of Photography; D. Dwight Davis, Curator of Vertebrate Anatomy at the Museum; Ragnar Hedenvall and Betty Henderson Hulettt, Associates of the Photographic Society of America; and Floyd Swink, nature lecturer. Both the judging and the entire exhibition were conducted under the rigid regulations of the Photographic Society of America, which rates the annual Chicago nature show as a Class A exhibit. In recognition of efficient management and high standards of the show, the society's Nature Division awards two special medals for outstanding examples of color harmony in nature.

Entries, both prints and color transparencies, are classified in three divisions—Plant Life, Animal Life, and General. Silver medals and honorable-mention ribbons have been awarded to leading prints and transparencies in each division. The names of all medal winners are inscribed on the Myrtle Walgreen plaque at the Museum in permanent recognition of photographic merit. Each person who enters the contest is entitled to an explanation if his print or slide is rejected; that is, if an entrant wishes, he can receive expert criticism—a service that is unusual as contests go.

The prints are shown in cases with fluorescent lighting, while the transparencies are rotated so that about 200 are exhibited each week. Projections of the entire group of accepted color slides are scheduled for two Sunday afternoons, February 10 and 17, at 3 P.M. in the James Simpson Theatre. The public is invited. The Sunday afternoon color-programs, lasting about one hour and 45 minutes, are staged to the accompaniment of appropriate background music, as the title and maker of each color transparency are announced. Last year's projections attracted about 1,100 spectators on the two Sunday afternoons of the show.

'REFLECTION'
By Kan Hing-Fook of Hong Kong, China.
Awarded an honorable mention in the
Nature Photography Exhibition.

WINNERS OF AWARDS IN NATURE PHOTO CONTEST

Following are lists of medal winners and awards of honorable mention:

MEDAL WINNERS

Prints:

ANIMAL LIFE SECTION: George B. Keyes, Vestal, N.Y.—*Head of Flying Dobson*

PLANT LIFE SECTION: Anders Sten, Vicka, Sweden—*Pine Forest in Snow*

GENERAL SECTION: Charles S. Wilson, San Diego—*Impact*

Color Slides:

ANIMAL LIFE SECTION: Samuel M. Benford, Mt. Vernon, N.Y.—*Neon Tetra Trio*

PLANT LIFE SECTION: A. Stewart, Santa Barbara, Calif.—*Woodland Gem*

GENERAL SECTION: John Benzel, Covina, Calif.—*Autumn*

HONORABLE MENTIONS

Prints:

ANIMAL LIFE SECTION: Louis Quitt, Buffalo; Albert N. Brown, Chicago; W. T. Loke, Singapore, Malaya; O. C. Edwards, Bangalore, India; M. W. F. Tweedie, Singapore, Malaya; Don Wooldridge, Jefferson City, Mo.; H. J. Ensenberger, Bloomington, Ill.; Eliot Porter, Santa Fe; Eugenia Buxton, Memphis; Howard E. Foote, New York City

PLANT LIFE SECTION: Delbert E. Philpott, Chicago; Jack Roche, Caldwell, N.J.; H. J. Ensenberger, Bloomington, Ill.; Roy E. Lindahl, Drayton Plains, Mich.; Cy Coleman, Detroit; L. A. Lyons, Port Kemla, Australia; N. P. Ochotta, Edmonton, Alberta; Louise K. Broman, Chicago; Edward T. Fiarman, Joliet, Ill.; W. A. Kirkpatrick, Phoenix, Ariz.; Otto Litzel, New York City; Alonso Aguilar, Jr., San Juan, Puerto Rico; Lawrence G. Heinrich, New York City; Caryl R. Firth, Trappe, Md.

GENERAL SECTION: Kan Hing-Fook, Hong Kong, China; Dr. Grant Haist, Rochester, N.Y.; Dr. Carrol C. Turner, Memphis; Art H. Oehl, Winnetka, Ill.; Earl W. Brown, Detroit; Alfred Ennes, San Francisco; Charles L. Wilson, San Diego; Evelyn Curtis, Oakland, Calif.; Otto Litzel, New York City; Caryl R. Firth, Trappe, Md.; Alfred Blyth, Edmonton, Alberta; Howard Oberlin, North Canton, Ohio

Color Slides:

ANIMAL LIFE SECTION: M. E. Barron, Beverly, Mass.; Louise K. Broman, Chicago; E. Collins, New Brunswick, N.J.; Helen M. Dart, Chicago; Harry Hoke, Stillwater, Okla.; T. Llyle Keith, Canaan, N.Y.; Michael R. Lynch, State College, Pa.; Helen C. Manzer, New York City; Mrs. Lorena R. Medbery, Armington, Ill; Mrs. Ethel P. Owen, Riverside, Ill.; L. E. Plietz, Milwaukee; Louis Quitt, Buffalo; Alfred Renfro, Bellevue, Wash.; Dr. Fred J. Ruch, Plainfield, N.J.; W. H. Savary, Plainfield, N.J.; Arthur T. Skopec, Bayside, N.Y.; Sydney Thomas, Miami; Mrs. Harley B. Van Sickle, Bremerton, Wash.

(*List continued on next page*)

NATURE PHOTO WINNERS—

(*Continued from page 3*)

PLANT LIFE SECTION: Arthur E. Anderson, Chesterton, Ind.; R. C. Born, Longmeadow, Mass.; W. L. Coleman, San Bernardino, Calif.; J. L. Cooprider, Evansville, Ind.; Walter Diehnelt, Menomonee Falls, Wis.; Willard H. Farr, Chicago; F. J. Freeman, Itasca, Ill.; L. C. Harvey, Brownsville, Ontario; T. Llyle Keith, Canaan, N.Y.; R. H. Kleinschmidt, Rochester, N.Y.; W. H. Koch, Salt Lake City; L. E. Mayo, La Mesa, Calif.; K. McGregor, Toronto, Ontario; Mrs. Estelle Marker, Oakland, Calif.; Mrs. Lorena Medbury, Armington, Ill.; Paul L. Miller, Seattle; Floyd Norgaard, Los Angeles; H. J. Novotny, Chicago; Barbara F. Palser, Chicago; Robert W. L. Potts, San Francisco; R. Presgrove, Toronto, Ontario; George W. Purdy, Port Orchard, Wash.; Perry W. Reynolds, Detroit; Mabel Ross, Salt Lake City; Dr. Fred J. Ruch, Plainfield, N.J.; Wes Stark, Toronto, Ontario; A. Stewart, Santa Barbara, Calif.; Raymond S. Vogel, St. Louis; N. E. Weber, Bowmansville, Pa.; Paul J. Wolf, Hawthorne, N.Y.; Eugene Z. Zimmer, Chicago; Mrs. M. Johnson Fuller, Riverside, Ill.; Raymond A. Matz, Chicago

'CECROPIA'

By H. J. Ensenberger of Bloomington, Illinois. Awarded an honorable mention in the Nature Photography Exhibition.

GENERAL SECTION: John L. Banks, Jr., Los Angeles; John Benzel, Covina, Calif.; Lillian Bloom, Chicago; Harold L. Colby, Owego, N.Y.; Harry L. and Ruth Crockett, Phoenix, Ariz.; John E. Davisson, Oakland, Calif.; R. C. Feagans, Bremerton, Wash.; Helen E. Fechter, Bozeman, Mont.; Georgina Fitzgerald, Chicago; Dr. Joseph B. Gill, Salt Lake City; J. A. Goldsack, Forest Hills, N.Y.; E. William Haskell, Santa Ana, Calif.; Joseph Hawkes, Chicago; R. S. Hildersley, London, England; W. Javurek, Cicero, Ill.; Robert J. Jiroushek, Villa Park, Ill.; Katharine M. McGregor, Toronto, Ontario; Clara L. Miller, North Riverside, Ill.; H. G. Mitchell, Chicago; Eugenia Norgaard, Los Angeles; Floyd Norgaard, Los Angeles; Adelaide K. Pearce, Chicago; W. W. Ratcliffe, Provo, Utah; Alice Payne Stark, Toronto, Ontario; Winifred Stewart, San Geronimo, Calif.; F. F. Weinard, Urbana, Ill.; D. W. Williamson, Montrose, Colo.; Alma Winton, Shippensburg, Pa.; Dorothy Wolstenholme, Fall River, Mass.

PHOTOGRAPHIC SOCIETY OF AMERICA MEDALS

Color Slides:

ADJACENT COLORS IN NATURE: L. A. Thurston, Detroit—*Bubble Bath*

COMPLEMENTARY COLORS IN NATURE: Raymond A. Matz, Chicago—*Acorns*

SUSPEND DALLWIG LECTURE SERIES UNTIL MARCH

The Sunday afternoon lectures by Paul G. Dallwig, the Layman Lecturer, will be suspended during February because of the absence of Mr. Dallwig on an out-of-town lecture tour.

Mr. Dallwig will resume his lectures at the Museum on Sunday, March 2, when he will begin presentation of a new subject, "Money Does Grow on Trees," the story of our American forests. The lecture will be repeated at 2 P.M. each Sunday in March. Reservations for the March lectures and also for Sundays in April (when the topic will be "Life—What Is It?") may be made during February by mail or telephone (WAbash 2-9410). Members of the Museum may attend the lectures without advance reservations by presentation of their membership cards.

Programs Begin March 1 . . .

SATURDAY ADULT LECTURES AND CHILDREN'S MOVIES

On Saturday, March 1, the Museum will begin its annual Spring Course of free illustrated lectures for adults on science, travel, and exploration. The lectures, which start at 2:30 P.M. in James Simpson Theatre of the Museum, will continue on Saturday afternoons through March and April. On the same Saturdays at 10:30 A.M., also in the Simpson Theatre, the Raymond Foundation will present its free series of motion-picture programs for children.

First of the afternoon lectures for adults is "Capturing Jungle Babies," illustrated with color motion-pictures, by Sasha Siemel, well-known explorer and photographer. Mr. Siemel's films record an exciting hunt in the jungles of Matto Grosso, Brazil, for giant jaguars (called "tigre" by the natives) with bow and arrow and a crude home-made spear as the only arms. On this hunt Mr. Siemel captured alive both full-grown and young jaguars for the Central Park Zoo in New York. His exploits won for him the name "Tiger Man," a term of respect for courage and daring bestowed by the Brazilian native Indians. The same film and a children's version of the lecture will be the Raymond Foundation program on the morning of the same day.

Complete schedules of both the adult and children's programs will appear in the March issue of the BULLETIN. For the afternoon lectures, each Member of the Museum is entitled to two seats in the reserved section upon advance application by mail or telephone (WAbash 2-9410). Seats will be held in the Member's name before the lecture until 2:25 P.M.

Iraq Museum Head Here

Bushir Alouse, director of the National Museum of Iraq at Baghdad, who came to this country to do graduate work in zoology, consulted with members of the Museum's zoological staff on a recent visit to Chicago.

SALAMANDER COLLECTION RECEIVED BY MUSEUM

The late Dr. Sherman C. Bishop, professor of zoology at the University of Rochester for nearly two decades, specialized in two research fields: spiders and salamanders. He became an eminent student in both and the author of many technical papers. Some students of arachnology did not know that he was also a herpetologist, and some of his colleagues in herpetology were similarly unaware of his work on spiders. It is illustrative of his merit that his personal collection of spiders was welcomed by the American Museum of Natural History in New York, now a center of arachnology, and that his herpetological material, presented by Mrs. Bishop and Mrs. Daniel W. O'Dell, daughter of the Bishops, was equally acceptable as an addition to the collections of Chicago Natural History Museum. The importance of the Bishop salamander collection may be realized by the fact that it forms the basis of Dr. Bishop's *Handbook of Salamanders*.

It should be explained here that salamanders are tailed amphibians resembling lizards in shape but actually related to frogs rather than to lizards. They are commonly called spring or wood lizards by the layman and are extensively used in biological laboratories by experimental zoologists. Salamanders occur in greatest abundance in the Appalachian highlands and, contrary to an old tradition, cannot live in fire.

In spite of poor health, Dr. Bishop was an avid field zoologist and made many collecting trips. His family and students often accompanied him, and he was thus able to build up a valuable reptile and amphibian collection for his university. At his death the university, at the instigation of Dr. Donald R. Charles, chairman of the department of biology, followed Mrs. Bishop's example by presenting this herpetological material to Chicago Natural History Museum. This act was the result of a decision by the university to drop work in vertebrate field biology and taxonomy, a type of zoology that more and more is being turned over to museums by universities. However, there are only a few museums with sufficient resources to support research, which raises some question as to whether this relocation of fundamental types of investigation is a good idea.

The salamanders from the University of Rochester added to those of the Bishop collection together about equal the number this Museum had previously possessed. This means that Chicago Natural History Museum now, with the combination of all three collections, has the finest assemblage of salamanders in existence.

Nothing in life is to be feared. It is only to be understood.—*Marie Curie*

MUSEUM RECEIVES 'KENYA GEMS'

By JOANNE NEHER
DEPARTMENT OF GEOLOGY

The Kenya Gem Corporation of Philadelphia recently donated to the Museum three cut synthetic rutiles—"The Kenya Gem"—and a boule.

'KENYA GEMS'
Miss Joanne Neher displays synthetic rutile cut in form of brilliants. Pear-shaped object is a boule.

A boule is a pear- or carrot-shaped mass of an artificial mineral produced in a furnace of special design by the fusion of certain elements composing the mineral. From the boule the gems are cut. Barring the fact that synthetic or artificial gems are made in the laboratory, they are essentially the same as the natural gems, both in chemical composition and physical properties.

Through the application of modern scientific methods and by the elimination of impurities, the production of synthetic rutile with sufficient transparency to be fashioned into gems has been made possible. This product has a very high refractive index. It thus approximates the diamond in brilliance, although it is not nearly as hard, being only 6.5, as against 10, the hardness of diamond.

In the manufacture of the Kenya Gem, the basic ore is ilmenite or iron titanate. This is reduced to titanium and subsequently converted into rutile or titanium oxide. The rutile is subjected to intense heat (3000° F.) to produce the boules, which are then cut into gems, usually in the form of brilliants. The gems range in color from almost colorless to light canary color. The colors are obtained by adding pigmenting materials. The three stones received by the Museum vary in weight and color: 1.38 carats, almost colorless; 2.84 carats, bluish; and 3.79 carats, light canary. These and the boule (90 carats) will soon be placed on exhibition in H. N. Higinbotham Hall of Gems and Jewels (Hall 31) alongside some natural rutile gems.

Natural rutile is oxide of titanium, containing more or less iron. Its usual color is reddish-brown, passing into black with a higher content of iron. Some of the reddish-brown rutiles, when cut, appear very similar to a ruby. Black rutile (known as nigrine), when cut, closely resembles the black diamond. Because of impurities, rutile is rarely sufficiently transparent to make clear stones of any size. Though lacking transparency and brillancy of color, it approaches the luster and hardness desired in a gem, and it has occasionally been used as one. At Graves Mountain, Georgia, long splendent rutile crystals have been found that are sufficiently beautiful to be worn uncut.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From the *Annual Report of the Director* for the year 1902:

"*Installation, Rearrangement, and Permanent Improvements.*—The exterior of the building has received the usual attention but it is becoming evident that certain parts of the structure have reached a state of decay where renewal is impossible. The steam plant was entirely overhauled and a new boiler substituted for one entirely worn out. The Director's office has been calcimined and a hardwood floor laid." [The building referred to, of course, is not the one occupied by the Museum today, erection of which was completed in 1920.]

"*Photography, Illustration, and Printing.*—The development of these two divisions continues and their importance as factors in Museum work cannot be questioned. The addition of a new Gordon press and a large amount of type has greatly increased the usefulness of the Division of Printing."

To look at his picture as a whole, a painter requires distance; and to judge of the total scientific achievement of any age, the standpoint of a succeeding age is desirable.
—*John Tyndall*

Every man has two educations—that which is given to him, and the other, that which he gives himself. Of the two kinds, the latter is by far the most valuable. Indeed, all that is most worthy in a man he must work out and conquer for himself.
—*Jean-Paul Richter*

CAKE AND WINE COME FROM SAME BUSH

By EMIL SELLA
CURATOR OF EXHIBITS, BOTANY

A fruiting branch of elderberry recently added to the exhibits in Martin A. and Carrie Ryerson Hall (Plant Life—Hall 29) represents the honeysuckle family. The American or sweet elder (*Sambucus canadensis*), like the other twenty species of this genus, is found in the temperate and subtropical regions of both hemispheres. Some of these species are said to possess medicinal properties.

The generic name applied by Linnaeus is the Latin name for an Old World species and may have reference to a musical instrument made from its hollow stem. Besides the well-known honeysuckle (Lonicera) vines and shrubs of parks and gardens, another important group in this ornamental family is the genus Viburnum. Formerly often grown for its handsome foliage, the elder will thrive in rich and rather moist soil. Its numerous small white flowers are fragrant and, when freshly gathered, may be mixed

AMERICAN ELDERBERRY
The juice of its berries makes wine; its small white flowers are sometimes mixed with batter and baked into cakes; and for some species of elderberry claims of medicinal properties are made. Reproduction of fruiting branch above was recently added to the exhibits in Hall of Plant Life.

with batter and baked into cakes. Elderberry wine is made from the large clusters of purple or nearly black fruits.

The accompanying photograph shows the attractive new reproduction, which was made by Artist-Preparator Samuel H. Grove, Jr., assisted by Preparator Frank Boryca.

A man's mind may be likened to a garden, which may be intelligently cultivated or allowed to run wild; but whether cultivated or neglected, it must and will bring forth. If no useful seeds are put into it, then an abundance of useless weed-seed will fall therein and will continue to produce its kind.—*James Allen*

We are just in the kindergarten of uncovering things and there is no down-curve in science.—*Charles F. Kettering*

Botanical Detective Story . . .

MYSTERY PRODUCT LINKS TAXIDERMY TO HAIR-DO

By EDITH M. VINCENT
DEPARTMENT OF BOTANY

TAXIDERMISTS at Chicago Natural History Museum often use a curious material for dressing furs of animals being prepared for exhibits. The same material, Chinese shavings, is used by commercial

'SAVE THE BOX TOP'?

A package of Chinese shavings with label showing a young lady using the shellac-like substance to hold her hair in place much as it is done in our own beauty shops.

furriers to produce a glaze for women's coats. The shavings are from wood of some kind, but what kind of wood is it?

Chinese shavings are about two or three feet long, three or four inches wide, very thin, and of a definitely woody structure. They come in bundles with labels on which are printed characters and the picture of a Chinese girl. The characters, translated for us by a Chinese student working in the Department of Botany, give directions for preparing the solution but say nothing about the kind of wood used in making the shavings.

At least we knew that the shavings came from China and apparently were a well-known article of commerce there. Surely some of the Chinese botanies, especially those about the useful plants of that country, would give some account of them. Because most of the books were indexed only for the scientific names of the plants and not for their uses, they proved disappointing until the last one consulted (which was almost discarded because it had no index) was looked over casually. It was a very small book by Augustine Henry, entitled *Notes on the Economic Botany of China*, and as I leafed through it, my eye was caught by the words "shavings, *P'ao-hua*."

USED IN CHINESE HAIRDRESSING

Reading more carefully, I found that these words were part of a letter to Dr. Henry from the Director of Kew Gardens in England, asking information about a "wood used by Chinese ladies for dressing the hair which is sold in the form of shavings, *P'ao-hua*, which, when put into water exudes a clean glue. The Paris Exhibition Catalogue tells us that the tree occurs in Kwang-tung, where it is known as the spittle tree."

The Director of Kew Gardens asked Dr. Henry to try to get specimens of the tree and more details about it because he had found no information in the Chinese botanies he had consulted. The letter ended with the query, "How long has the practice of using this glue been in vogue with the Chinese ladies? I am not aware that any one has paid attention to the subject of fashion in China."

Now I had both a Chinese and an English name to look for, but none of our books listed either of them in their indexes. However, the inquiry to Dr. Henry had come from Kew Gardens and I recalled that they publish a series of bulletins about plants. If Dr. Henry had replied to the request, maybe it had been published in one of these bulletins. Starting with 1893, the date of the Henry book, I searched the indexes for "P'ao-hua," "spittle wood," and "Chinese shavings," none of which I found. But when I came to the index for the 1897 volume, there was a listing of "Chinese Bandoline Wood," which sounded as if it might be the same or a similar product.

This article repeated the facts about the glue-producing qualities of the wood and its use by Chinese ladies as a hairdressing and went on to say that it was exported from Canton to Peking under a Chinese name meaning cosmetic glue shavings. From leaf specimens sent to Kew by the British Consul at Ningpo the tree was identified tentatively as *Machilus Thunbergii*, a species originally described from Japan by Siebthorp and Zuccarini. A drawing made from these and later specimens, showing flowers and fruits, was published the same year in Hooker's *Icones Plantarum*.

IDENTITY ESTABLISHED

Apparently this settled the identity of the tree, but the description was not sufficiently detailed to be completely satisfactory; and I went on to see if there were more recent accounts. *Tropical Woods*, a magazine published by the Yale School of Forestry, was the most likely place to find them. My search was rewarded by several short articles about the wood known to them as "pau-hoi," a variation of the name "p'ao-hua" used by Dr. Henry. These notes were by various authors who differed as to the proper name for the tree but were unanimous in their accounts of its mucilage-producing quality.

In 1930 there was a final article by Ryozo Kanehira, a botanist then connected with the Taihoku Imperial University of Formosa. He said that the earlier articles had raised the question as to whether or not the Chinese "pau-hoi" had been correctly identified. In trying to settle that question he had made microscopic examinations of authentic specimens of "pau-hoi" and of *Machilus Thunbergii* that showed differences of structure; also the specimen of *M. Thunbergii* did not yield a gluey solution when soaked in water. He had received reports that shavings from several other species of *Machilus* as well as from trees of other genera were being sold as "pau-hoi."

After carefully examining specimens of all of them he came to the conclusion that they were commercial substitutes or adulterants. However, the "pau-hoi" that yielded the gluey solution definitely belonged to the genus *Machilus*, though not to any of the published species. Accordingly he gave it the new name *Machilus pauhoi*. It is an

FOR COIFFURES AND TAXIDERMY

Opened package of Chinese shavings showing how they are peeled off for use. One or two shavings soaked in water yield a sort of shellac used in China for dressing women's hair and in the Museum for treating animal skins.

evergreen tree belonging to the laurel family, which is native in southeastern China. It grows as high as 90 feet, is about two feet in diameter, and has smooth gray bark. The leaves are a shiny dark green above and light green underneath. It has clusters of fragrant creamy-yellow flowers and deep-green round berries.

The only Madagascar ethnological collection of importance in the United States and one of the most complete in existence is exhibited in Hall E.

MEXICAN MOUNTAINS A 'PARADISE' FOR HERPETOLOGISTS

By CLIFFORD H. POPE
CURATOR OF AMPHIBIANS AND REPTILES

The Zoological Field Trip to Mexico of 1951 returned to the Museum early in September after nearly eight weeks of work. The distance traveled in Mexico alone came to 4,400 miles, an amount that would have been much smaller if the floods of late summer had not blocked the shortest way out. The expedition was led by the writer, who worked for much of the time in co-operation with Charles M. Bogert, curator of the department of amphibians and reptiles of the American Museum of Natural History, New York, and Dr. Archie F. Carr, of the department of biology of the University of Florida. Mr. Bogert is a specialist in Mexican herpetology, and Dr. Carr, a herpetologist with distinct ecological leanings, has a comprehensive knowledge of faunal and floral relationships in tropical America.

The main objective of the expedition was a survey of the salamander fauna of the southern part of the Mexican highlands. For the benefit of those who do not know just what a salamander is, it is stated here that salamanders are small, scaleless animals that resemble lizards in appearance but differ fundamentally from them in structure and habits. In these characteristics salamanders are much more like frogs and are classified as amphibians.

ISOLATION OF MEXICAN SALAMANDERS

For several years I have been studying the salamanders of our southeastern mountains, and it has become increasingly desirable to compare the fauna of these mountains with that of Mexico. These faunas, though related, have been separated presumably for millions of years by the deserts of northern Mexico, and the comparative study of them should shed light on evolutionary rate and processes. The co-operation of Mr. Bogert and Dr. Carr in such a complicated study was of inestimable value.

The site most intensively worked was the region of the Nevado de Toluca or Zinantecatl. This nevado, which has a crater, raises its snow-capped head to an altitude of 15,000 feet near the center of the state of Mexico just southwest of the city of Toluca. Through the kindness and generosity of Mr. and Mrs. Frank Pogolotti of Mexico City, the herpetologists were able to work at Ixtapan de la Sal to the southeast of Zinantecatl. Headquarters were established in the Pogolotti home for a week and the host and hostess helped the scientists in many other ways.

NEAR SNOW-LINE

After headquarters were shifted to a point just north of the nevado, an altitudinal survey was made of the reptiles and amphibians on the slopes of the mountains. Emphasis was placed on salamanders, which lived even above the 12,000-foot level and not far below the summer snow-line. Conditions of the floor of the fir forests of moderate altitude on the nevado are strikingly like those at lower levels in our southern Appalachians. It is in the ground cover of damp forests that salamanders reach their greatest abundance in the United States. In Mexico they thrive under similar conditions.

Several other sites were surveyed more quickly, among them the Lagunas de Zempoala in the region of the common boundary of the state of Morelos and the Federal District. Here a series of small lakes occupies valleys completely surrounded by steep mountains. The bed of the "dry" lake in which we worked is a haven for amphibians because of the mat of vegetation growing in the shallow water. One small species of salamander was particularly abundant in rotting logs lying in or beside the water. The remoteness of the lakes, the precipitous, pine-covered slopes, and the altitude (9,300 feet) combined to give the site a character of its own that one cannot forget. The lower slopes of Mount Popocatepetl also proved to be a salamander paradise, with individuals so abundant that we were able to capture more than one hundred specimens in less than two hours. The evergreen forest was dense and damp and its altitude great: 10,300 feet.

EVOLUTIONARY SOCIAL CLIMBER

Artist Margaret Bradbury's cartoon depicts the Mexican salamander vainly trying to raise itself in the Darwinian scale. In spite of a lizard-like appearance and a lower evolutionary rank, salamanders are persistently called lizards by the confused layman. The presence of dry scaly skin and the love of sunshine are lizard characteristics; the salamander has a damp bare skin and shuns dry warm places.

LOFTY COLLECTING GROUND

The Nevado de Toluca (the Volcan Zinantecatl) towering above the village of Zinacantepec, Mexico, was the principal focus of interest for the Zoological Field Trip to Mexico of 1951. Photo by Charles M. Bogert.

The tools, weapons, utensils, houses, clothing, modes of transportation, ornaments, musical instruments, wood carvings, and textiles of many groups of people of the Malay Peninsula and the Malay Archipelago are shown in Hall G.

The fossil fishes, amphibians, reptiles, birds, and mammals exhibited in Ernest R. Graham Hall (Hall 38) are arranged, in general, according to biological relationships and show the development of the various vertebrate forms.

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.)*

LABORATORY MANUAL FOR GENERAL ZOOLOGY. By Tracy I. Storer. McGraw-Hill Book Company, Inc., New York, 1951. v+150 pages, 20 text figures. Price $2.50.

The great success of Dr. Tracy I. Storer's *General Zoology*, of which a second edition appeared in 1951, is most gratifying to museum zoologists because of its relative emphasis on the diversity of the animal kingdom, i.e., of systematic zoology and of the anatomy of the animal forms. Systematic zoology and botany have been more and more neglected in American universities, and without adequate training of students in this direction the whole foundation of biology will be gravely weakened.

The laboratory manual that accompanies *General Zoology* has also been revised for a second edition and is an adequate laboratory supplement to the larger text. It is necessarily focused on the indoor laboratory and thus is of little significance to training in the kinds of outdoor natural history fostered by the Museum.

KARL P. SCHMIDT
Chief Curator of Zoology

Technical Publications

The following technical publications were issued recently by Chicago Natural History Museum:

Fieldiana: Botany, Vol. 27, No. 2. *Contributions to the Flora of South America: Studies on Andean Compositae—II, Studies in South American Plants—III.* By José Cuatrecasas. November 9, 1951. 113 pages. $1.50.

Geological Series, Vol. VII, No. 11. *The Benld Meteorite.* By Sharat Kumar Roy and Robert Kriss Wyant. December 5, 1951. 13 pages. $0.30.

Fieldiana: Geology, Vol. 10, No. 12. *A Mastodont Tooth from Szechwan, China.* By Dirk A. Hooijer and Edwin H. Colbert. December 6, 1951. 6 pages. $0.15.

Fieldiana: Zoology, Vol. 32, No. 9. *Birds from Liberia.* By Austin L. Rand. December 19, 1951. 97 pages. $1.00.

Fieldiana: Zoology, Vol. 32, No. 10. *A Revision of the North American and European Staphylinid Beetles of the Subtribe Gyrophaenae (Aleocharinae, Bolitocharini).* By Charles H. Seevers. December 21, 1951. 107 pages. $1.25.

Fieldiana: Geology, Vol. 11, No. 5. *Late Devonian Fresh-Water Fishes from the Western United States.* By Robert H. Denison. December 28, 1951. 43 pages. $0.75.

FEBRUARY LECTURE TOURS, DAILY EXCEPT SUNDAY

Tours of exhibits, under the guidance of staff lecturers, are conducted every afternoon at 2 o'clock, except Sundays and certain holidays. On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given covering all departments. Special subjects are offered on Wednesdays and Fridays. A schedule of these follows:

Fri., Feb. 1—The Story of the Dunes. Illustrated introduction in Meeting Room (*Marie Svoboda*).

Wed., Feb. 6—Natural History Facts and Fallacies (*Lorain Stephens*).

Fri., Feb. 8—Indians of the Southwest. Illustrated introduction in Meeting Room (*June Buchwald*).

Wed., Feb. 13—Stone Age Man (*Anne Stromquist*).

Fri., Feb. 15—Adapt or Become Extinct: Nature's Struggle for Survival. Illustrated introduction in Meeting Room (*Jane Sharpe*).

Wed., Feb. 20—Plant Pioneers (*Miriam Wood*).

Fri., Feb. 22—Adventures of a Fossil Hunter. Illustrated introduction in Meeting Room (*Lorain Stephens*).

Wed., Feb. 27—Exotic and Unusual Flowers (*Marie Svoboda*).

Fri., Feb. 29—Giants: Large Plants and Animals. Illustrated introduction in Meeting Room (*Miriam Wood*).

NEW MEMBERS

The following persons became Museum Members from December 17 to January 18:

Corporate Members

John G. Searle, Louis Ware

Associate Members

Dr. Jesse R. Gerstley, Albert W. Potts, Dr. Albert L. Raymond.

Annual Members

David Blair, Edward W. Blatchford, Abbott Coburn, Dr. Chester Coggeshall, Robert T. Drake, Edmond I. Eger, J. S. Garland, Hebron Hixson, Dr. Charles E. Hughes, William A. Indelli, Robert Jones, Marshall Korshak, R. E. Long, Bernard W. Lynn, Graydon Megan, Fred L. Ottenheimer, Anderson Pace, Roger L. Severns, Herbert Stuart Stone, Jr., Edwin P. Vanderwicken.

GIFTS TO THE MUSEUM

Following is a list of the principal gifts received during the past month:

Department of Anthropology:

From: William Ryer Wright, Highland Park, Ill.—archaeological and ethnological specimens, North America.

Department of Botany:

From: William A. Cassel, Philadelphia—16 cultures of algae; Dr. Maxwell S. Doty, University of Hawaii, Honolulu—14 algae, Oregon and California; R. L. Dunkeson, Willow Springs, Mo.—28 phanerogams, Missouri; Prof. F. E. Fritsch, University of Cambridge, England—4 algae; E. P. Killip, Washington, D.C., and J. Francis Macbride, Stanford University, Calif.—6 algae, Florida; Dr. Herman Kleerekoper, Hamilton, Ont.—331 algae, Quebec; J. Francis Macbride, Stanford University, Calif.—46 algae, southeastern United States; Dr. Grace C. Madsen, Florida State University, Tallahassee—38 algae, northern Florida; Dr. Richard W. Pohl, Iowa State College, Ames—213 phanerogams, Missouri; Dr. F. Schwerdtfeger, Guatemala City—39 pinus, Guatemala; Smithsonian Institution, Washington, D.C.—9 miscellaneous algae; Floyd Swink, Chicago—264 phanerogams, Illinois and Indiana; Archie F. Wilson, Flossmoor, Ill.—13 phanerogams, Korea; Mrs. H. P. Bracelin, University of California, Berkeley—540 phanerogams, Mexico and South America.

Department of Geology:

From: University of Chicago—paleobotany collections; Kenya Gem Corp., Philadelphia—a boule and three faceted gems of synthetic rutile; Jon S. Whitfield, Evanston—87 invertebrate fossil specimens, Wilmington, Ill.; Dr. and Mrs. R. H. Whitfield and Jon S. Whitfield, Evanston—140 fossil plant specimens, Wilmington, Ill.

Department of Zoology:

From: Chicago Zoological Society, Brookfield, Ill.—66 bird skeletons, 27 birds in alcohol, and a dasyure (*Dasyurus viverrinus*), captive; Robert M. Crowell, Wooster, Ohio—5 slides of water-mites, United States; Capt. Robert Guillaudeu, APO, San Francisco—196 specimens of fishes, 45 frogs, and 13 snakes, Korea; M. J. R. Lentz, St. Louis—a snake, Missouri; Lincoln Park Zoo, Chicago—2 birds, captive; William E. Old, Jr., Norfolk, Va.—a collection of shells, worldwide; Shedd Aquarium, Chicago—a sea turtle; Dr. Harold Trapido, Panama City— 3 caecilians, 315 frogs, 290 lizards, 33 snakes, and 11 turtles, Panama; Dr. Neal A. Weber, Baghdad, Iraq—3 lizards, Iraq.

Raymond Foundation:

From: Charles Albee Howe, Homewood, Ill.—22 (2 x 2) original color slides.

Library:

From: Stanley Field, Lake Bluff, Illinois; Karl P. Schmidt, Homewood, Ill.; Department of Anthropology, University of Chicago; Henry Dobynes, Tucson, Ariz., Dr. Fritz Haas, Chicago; Dr. Gerhard Lohmeyer, Frankfurt-on-Main, Germany.

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Chicago Natural History Museum

Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

TELLS STORY OF MUSEUM ON 6-STATE TOUR

Harriet Smith of the Raymond Foundation lecture staff has returned to her regular duties at the Museum after a five-month leave "on loan" to the School Assembly Service lecture agency.

Miss Smith served as a public relations representative for the Museum during this extensive midwest tour of six states in which she presented the behind-the-scenes story of Museum work some two hundred times. About half of these programs were high-school auditorium assemblies. The others were presented to varied audiences—wide age-range groups (community schools and military and church academies) and adults in club and college organizations. Attendance ranged from 50 at service-club luncheons to 2,500 in a civic auditorium. The average audience numbered around 800.

The lecture, called "Treasure House," was built on a specially edited version of the Museum's color motion-picture, "Through These Doors," produced by John W. Moyer, Chief of the Museum's Motion Picture Division. The sound track was not used, and the re-edited film includes additional sequences on the Museum's Hall of the Stone Age of the Old World and the mounting of the gorilla, Bushman. Cave men were added to illustrate the reconstruction of physical type and ways of life made possible through the scientific methods of archaeology and physical anthropology, as presented in the original film. Bushman's publicity value just at this time served as an effective device for catching the attention of audiences, and the Museum magic demonstrated in his mounting held this attention, commanding respect for the painstaking research and skilled workmanship that go hand in hand in all areas of the Museum's behind-the-scenes activities.

DAILY GUIDE-LECTURES ON REVISED BASIS

Beginning March 1 the Museum announces a revised program for its free guide-lecture tours that are offered at 2 P.M. daily except Sundays. Henceforth all of the regular public tours will be presented under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities.

This change, eliminating the tours on special subjects formerly given on Wednesdays and Fridays, was made after a study of tour attendance statistics for the past several years indicated the type of tour desired by the majority of visitors. However, special tours on subjects within the range of the Museum exhibits will be available as heretofore (Mondays through Fridays) for parties of ten or more persons. Requests for such service must be made at least one week in advance.

STAFF NOTES

Rupert L. Wenzel, Curator of Insects, returned to the Museum in February bringing with him large collections of beetles of the family Histeridae, to which group his studies in Europe were devoted. He will continue to receive large additional collections from Europe for study. Most notable acquisition was the Bernhauer collection of Staphylinid beetles recently purchased in Vienna by the Museum .... **Dr. Fritz Haas,** Curator of Lower Invertebrates, left on February 7 for two months of field work in Cuba. He has been given working quarters in the University of Cuba in Havana. .... **Dr. Paul S. Martin,** Chief Curator of Anthropology, has been appointed by the Encyclopedia Americana as editorial consultant on American Indians .... **Dr. Julian A. Steyermark,** Curator of the Herbarium, recently conducted a seminar for the faculty and graduate students of the biology department at Northwestern University on "Ecology, Plant Distribution, and Speciation in the Flora of Missouri with Special Reference to the Ozarks."

THIS MONTH'S COVER

An owl, probably the Little Owl of Europe, is the bird of Athena, the divinity of Greek genius in its artistic and intellectual aspects. Ornithologists who know the grotesque actions and ludicrous expressions of this buffoon of birds have wondered at its having been seriously selected as the symbol of learning and have suspected that the choice was made in a spirit of sarcasm. The picture on our cover, "Triple Wisdom," by O. C. Edwards, of Bangalore, India, won honorable mention in the Seventh Chicago International Exhibition of Nature Photography held at the Museum last month. The owls shown are youngsters of a species native to India and related to the pygmy owls of the western United States.

DALLWIG RESUMES SUNDAY LECTURES IN MARCH

Paul G. Dallwig, the Layman Lecturer, will resume his Sunday afternoon talks at the Museum during March after an absence of one month for an out-of-town lecture tour. His lecture for each Sunday in March is "Money Does Grow on Trees," the story of the development and conservation of America's great forests. This lecture will be repeated at 2 P.M. on March 2, 9, 16, 23, and 30.

A feature of the lecture for March is a three-act dramatization by Mr. Dallwig of the hazards, thrills, and tragedies of an early logging operation. Mr. Dallwig will tell also about plywood, veneers, and "superwood"; explain the difference between hardwood and softwood; define the terms "solid," "veneer," and "genuine" as applied to mahogany and walnut furniture; and disclose the methods by which science is turning forest products into food, clothes, alcohol, and plastics—a story that justifies his conclusion that "money *does* grow on trees." The lecture for Sundays in April will be "Life—What Is It?"

Members of the Museum may use their membership cards to attend these lectures without advance reservations. All others, with the exception of accredited representatives of the press, must make reservations in advance. Reservations may be made by mail or telephone (WAbash 2-9410). The lectures are free. They start promptly at 2 P.M. and end at 4:30 P.M., including a half-hour intermission for relaxation or for tea or coffee in the Museum cafeteria, where smoking is permitted.

Saturday afternoon lectures—*see page 8.*

WHAT WOULD A RATTLESNAKE DO TO YOU—BITE OR STAB?

By CLIFFORD H. POPE
CURATOR OF AMPHIBIANS AND REPTILES

ALTHOUGH for centuries rattlesnakes have been biting human beings with painful or even fatal results, their exact manner of doing so remains unknown. The reason is not far to seek: The snake is much too quick for the eye. We do know that a successful bite injects specialized saliva, commonly called venom, into the flesh of the victim.

It should be remarked parenthetically that the forked tongue of the snake has no part in the injection, which is accomplished solely by the fangs, two long, hollow teeth

ONE SNAKE—NOT THREE

Three positions in one strike of a western diamond-back rattlesnake. The flashes were set off by "electric eyes" and the duration of each exposure was about 1-2500th of a second. Photograph by J. B. Leviton.

in the front of the upper jaw. Well concealed by a fleshy sheath, the fangs lie against the roof of the mouth until erected for action. They can be moved either singly or together, and opening the mouth does not necessarily bring them into play, notwithstanding statements in many books.

The method of biting seems to be much the same among Old World vipers and American pit-vipers. Cobras and their relatives use a different method. These snakes, found chiefly in the Old World, do not strike at all (as, for example, the coral snakes) or do so by a simple forward and downward thrust of the elevated head, neck, and forebody, which are kept straight all the while. Seizure is often followed by a chewing movement of the jaws. In contrast, the rattlers and other vipers hold neck and forebody in an "S" curve until the strike is made by a lightning-quick straightening of the curved parts. Release is usually instantaneous.

IMPORTANT IN TREATMENT

Is this problem of how a snake bites an important one? It is for several reasons. The most practical of these is the matter of telling whether a person has been bitten by a harmless or a venomous species. The treatment of snake-bite is at best drastic, at worst exceedingly dangerous; therefore its avoidance is truly desirable. Another reason, concerned with evolution, is of interest to the theorist: Have vipers, highly evolved among snakes, developed a new way of biting, or have they merely modified the old one of most snakes? Then there is a third reason, the satisfaction of plain, old-fashioned curiosity answering the perennial question, "How does it work?" This third reason should not be taken too lightly since it reflects the attitude responsible for the development of modern science and its technology. At least we like to talk a lot about "pure science" and how it has revolutionized our lives during the past century.

There are two theories as to how a rattlesnake bites. One might be called the "stab" theory and the other the "bite" theory. The former conceives of the act simply as a stab with the fangs alone. The result would be a pair of punctures, since the jaws and other teeth would not normally touch the victim. When you watch a snake strike, this is what it appears to do; so the origin of this conception is obvious. Just as obvious is the origin of the usual statement that the bite of a venomous snake can thus be recognized at once; there is no question that a harmless species leaves some six rows of punctures when it bites.

The other theory sees the act as a complex rather than a simple one. According to it, the snake actually seizes the object with the ordinary teeth of both jaws before or simultaneously with the embedding of the fangs, which are withdrawn before or just as the teeth release their grip. When you watch a strike it seems impossible that so much action could escape the eye, and this probably explains why the theory is not widely held. But a bitten clay model always has four rows of punctures as well as the two fang marks, a fact that cannot be laughed off no matter what the eye records. Therefore the facts seem to me to prove that the second theory is correct.

BITE VERSUS STAB

A comparative examination of these two methods brings out some pertinent points. It is hard to see how a snake could gauge a stab-like thrust so accurately that the fangs would stop at the right split-second time and split-millimeter place for efficient ejection. The presence of fur or feathers greatly increases the difficulty. If the thrust went too far, the resistance of a large victim would cause injury to the snake and a small victim would be knocked away. Actually a large rattler can strike a relatively small animal without even causing it to lose balance. A stab would bring the tips of the fangs into play in advance of everything and might mean injury to their delicate tips, whereas a bite would get the fangs into action last and so conserve them. The bite would prevent the escape of the prey no matter how alert or quick it might be.

Broadly speaking there are three ways of finding out exactly how a rattler bites. You can watch one bite. If this method worked, the answer would have been known for centuries. You can experiment, let us say, with materials such as modeling clay, allowing the snake to bite cylinders and studying the marks left by the teeth. R. Marlin Perkins, director of Lincoln Park Zoo, and I have used this method, even going as far as to include a gelatin replica

THE VENOM IS INJECTED

Culmination of a strike by a diamond-back rattlesnake. Method and time of exposure as in other photograph by J. B. Leviton (light area on snake's body is result of second flash).

of a human hand. The results of our investigation, published in the *Archives of Surgery* (1944), apparently have not convinced everyone interested. Finally, you can use photography, a method that would seem to be final. Modern photography includes many techniques, but those used to date are still unconvincing: Two persons can look at the same photograph and come to opposite conclusions.

In March, 1950, *Natural History*, the magazine of the American Museum of Natural History, New York, published an article by Walker Van Riper entitled, "How a Rattlesnake Strikes." The article began with a sentence discouraging to me: "That the strike of the rattlesnake culminates in a stab rather than a bite is shown in the accompanying pictures." The article has three speed-photographs of stages of the strike of a rattler. The object is a balloon and the duration of exposure was on the order of one ten-thousandth of a second. Mr. Van Riper had rigged up an extremely clever device that made the snake photograph itself, the target and the snake being part of an electric circuit closed by the first contact of any part of the snake with the balloon. The disappearance of the balloon when punctured kept the snake from following through with a natural bite

and greatly detracted from the scientific value of the picture.

Again some light was shed on the problem, but plenty of loopholes for skeptics remained. I have learned through correspondence with Mr. Van Riper that he has made many other interesting photographs of strikes and has thus advanced our knowledge without, as far as I can tell, finally solving the problem. I believe that he might do so by placing a small conducting object within a rubber bulb not itself a conductor. The snake would be forced to compress the bulb before closing the circuit and thus produce a conclusive photograph.

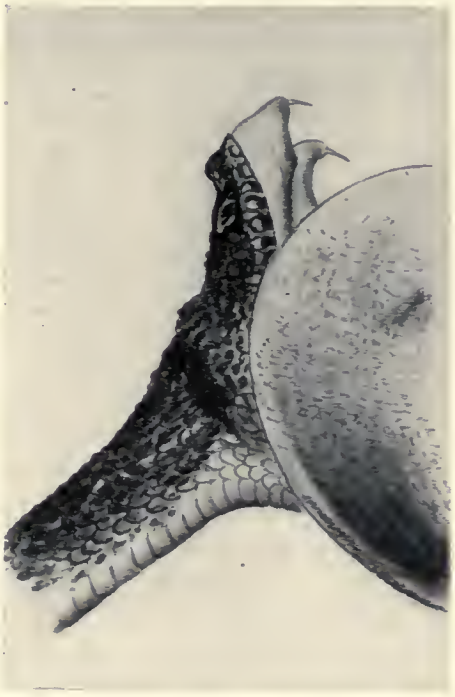
OTHER EXPERIMENTS

A short article published by *Life* magazine on August 12, 1947, with exactly the same title as the one just discussed emphasizes another aspect of the problem: the value of the heat-sensitive facial pits of the rattlesnake in the aiming of the strike. Although this question of the use of the pit of pit-vipers (rattlesnakes, copperheads, water moccasins, and so on) is very interesting in itself, it is beyond our scope. *Life's* article includes two speed-photographs, one that supports the bite theory and one that might be taken as a boost to its opposite.

My first attempt to study the strike of a rattlesnake by photography was made about three years ago in Virginia at Mountain Lake Biological Station. I had the indispensable aid of Dr. A. M. Winchester, who is a biologist as well as a photographer. Dr. Winchester generously offered to handle his camera if I would provide and take entire charge of the snake. His plan was to set the camera up on a small table and depend on the quickness of his eye to catch the snake at the crucial instant with his high-speed flash. Fortunately, Mrs. Winchester watched us in a state of extreme nervousness, for the room was small and she had to be perilously near the snake. She had every appearance of being totally unaccustomed to such a relationship. Although Dr. Winchester believes it was the quickness of his eye that got the result, I am convinced the air-rending scream of his wife, uttered just before the strike, startled him into pressing the trigger at the proper split second.

The photograph has been copied in ink because the artist was able to bring out certain important details. The copy is reproduced here. The wad of cotton wrapped in gauze is clearly seen in the jaws of the snake, a fact that certainly suggests a bite rather than a stab. Any skeptic can point out that such a picture does not offer final proof because the fangs are not shown imbedded in the wad. Nevertheless, the Winchesters should be congratulated on a splendid bit of co-operation.

In the autumn of 1950, Lt. Jay B. Leviton next offered to help with a roomful of equipment that included photo-electric cells. Two rattlers were borrowed from Lincoln Park Zoo and Lt. Leviton arranged several "electric eyes" so that the strike of a snake would interrupt their beams and set off lights to expose the film. A snake was confined to a big carton with a glass window in one side for passage of the beams. The equipment seemed to be about as unpredictable as the snake; so two days of hard



THIS COULD HAVE MEANT DEATH

Banded rattlesnake striking a wad of cotton wrapped in cloth. Presumably the fangs are about to sink into the wad, although it is possible that they are being withdrawn. From photograph by A. M. Winchester.

work and the aid of several persons were required. When one snake decided that the game was not worth the candle, to it, at least, and refused to strike, it was persuaded to change its mind by a slight electric shock. The great difficulty of preventing the snake from missing a beam on the forward motion but intercepting it on the return was never overcome.

Of the many shots made, only a few were revealing. One of these has been printed in color in *Collier's* magazine (March 31, 1951) and two are shown with this article. The results of this last effort add evidence in support of the bite theory but still do not give us a series of pictures of a complete strike. Perhaps nothing but moving pictures will do this. The difficulty with such a method is the great amount of heat generated by the very powerful lights required for this sort of high-speed cinematography. Such heat would be too much for even a snake.

This account has its moral: The apparently simple problems of life and of science often turn out to be the hardest. If the moving pictures settle the strike dilemma, the stumbling blocks that were surmounted will be forgotten and few will recall how much time and effort were spent in getting a solution

* * *

Memo for Museum visitors: Rattlesnakes are well represented among the exhibits in Albert W. Harris Hall (Hall 18).

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From the *Annual Report of the Director* for the year 1902:

"*The Library.*—It was mentioned in the last Report that several books and pamphlets were missing. Careful search has resulted in the restoration of all those that were missing with the exception of one book and eight pamphlets. This is a satisfactory showing when it was considered that this was the first inventory taken since the opening of the library. The most important work done during the year, aside from the regular routine duties, was on the shelf list, subject and author catalogues. Over 2,400 new cards have been written . . ." [This may be compared to the 18,777 new cards written for 1951.]

"*Departmental Inventorying, Cataloguing and Labeling.*—It is highly gratifying to be able to report that the Department of Ornithology has completed the inventory of the study collection which approximates 27,000 specimens. A card catalogue has been prepared showing the number of specimens in each species, from whence obtained, the sex, month and locality in which they were taken and the case and tray in which they may be found." [The Division of Birds estimates the number of study specimens at the end of 1951 as about 220,000.]

Audubon Society to Present Sunday Afternoon Lecture

Fourth of the Illinois Audubon Society's current series of lectures in the James Simpson Theatre of the Museum will be given on Sunday afternoon, March 16, at 2:30 P.M. Olin Sewall Pettingill, noted ornithologist of Carleton College, will present "Athabaska Sojourn," illustrated with color motion-pictures. The lecture is free and the public is invited. Members of the Museum or of the Audubon Society are entitled to seats in the reserved section of the theatre upon presentation of their membership cards to the ushers. The final lecture of the season will be given in April.

Free movies for children—*see page 7.*

A RARE GRASS FOUND IN CHICAGO AREA

By JULIAN A. STEYERMARK
CURATOR OF THE HERBARIUM

USUALLY it is professional botanists who are responsible for the discovery of new or rare plants to be added to the known flora of the world. But often their attention may be directed to an unusual find by a layman.

In the late autumn of 1951, Christian M. Nielsen, architectural designer for the Chicago Park District, received from C. W. Larsen, of Glen Ellyn, Illinois, a flowering portion of a plant growing in that suburb. Mr. Nielsen gave his specimen to Barton S. Austin, landscape designer for the park district, for identification. Mr. Austin thought it resembled the ornamental grass known as pampas grass. In order to verify this identification he sent the material to the Department of Botany of Chicago Natural History Museum.

'ESCAPE' FROM IOWA

Here careful study of the specimen disclosed that the plant is an unusual ornamental grass, rarely planted in this country. It was known in the United States, according to latest records, only as an "escape" from a locality in Clinton County, Iowa (an "escape" is a plant that grows without care or attention by man either in or away from the vicinity of its original planting). This Glen Ellyn collection is, therefore, the first one ever made in Illinois. As this grass was reported growing at random in a vacant lot, this can be considered the second record of its occurrence as an escape in the United States.

The name of the plant is *Miscanthus sacchariflorus*. This species is related to a more commonly cultivated species of the same genus, *Miscanthus sinensis*, often referred to as eulalia. Both of these grasses are from Asia, but *M. sinensis* has been cultivated for some time in this country. Another species, *Miscanthus nepalensis*, with yellow-brown instead of whitish hairs around the flowers, is infrequently cultivated under the name of Himalaya fairy grass. It is a native of Nepal, India.

Because the herbarium of Chicago Natural History Museum contained only a fragmentary specimen of *Miscanthus sacchariflorus*, taken from a plant cultivated at Rochester, New York, and received some years ago for identification from the Florists' Publishing Company of Chicago, I visited the locality in Glen Ellyn to obtain additional collections. The vacant lot where the plant grows is located south of the residence of Mrs. Peter Gusie, 215 Lorraine Road, Glen Ellyn. It was through Mr. Larsen's and Mrs. Gusie's interest that the plant originally came to the attention of Mr. Nielsen. Many residents of Glen Ellyn had admired the plant and wondered what it might be.

When I arrived at the spot, I was pleased to see a large stand of this ornamental plant forming a solid, dense colony about fifteen feet long and ten feet wide. Numerous upright stalks four to six feet high stretched above the dried buff-brown autumnal leaves attached to the stems and rising from the base of the plant. At the top of each of these tall stems were the beautiful, graceful fruiting sprays conconsisting of large fan-shaped plumes of soft, delicate, silky, white hairs. Viewed against the blue sky that day, the color contrast was exceedingly effective. I learned from Mrs. Gusie that this plant had been introduced from California by the original owner of the lot and that it has since spread out to form this large colony.

Like many other grasses, this species spreads vegetatively by underground stems (rhizomes) that grow in all directions from the original plant. Mrs Gusie had started some plants in her own back yard and these had increased to form a stand of considerable size. She and her friends were using the feathery white inflorescences for winter home-decoration. Even though the fruiting sprays were beautiful at that time of year (around November 1), she assured me that they were even more attractive in September and October before they had begun to lose some of the hairs surrounding the seeds.

OTHER ORNAMENTAL GRASSES

Many people think of grasses only as (1) lawn grasses, (2) pasturage or forage for cattle, or (3) sources of principal staple foods and cereal crops for man and other animals (rice, wheat, corn, rye, barley, oats). However, a number of grasses are grown purely as garden ornamentals.

Grasses, one of the largest families of flowering plants, are divided, on the basis of structural differences, into several tribes, one of which is called *Andropogoneae*. This tribe includes a number of ornamental forms. Many members of this tribe possess tufts of soft, white, yellow, buff, or golden-brown hairs associated with flowers and fruits and for this reason have a characteristic feathery or soft outline unlike most other grasses. The common prairie grass, also called blue stem or poverty grass, represents several species of the genus *Andropogon* of the tribe *Andropogoneae*. These species possess such hairs. Their pale-brown or russet-pastel shades of dry foliage lend a soft, white or buff-colored enchantment to the autumn landscape.

Other ornamental grasses are various species of *Erianthus*, known as plume grass; giant reed (*Arundo donax*), a native of warm regions of the Old World; uva grass (*Gynerium sagittatum*), wild in tropical America, often used as a soil binder and for thatching as well as for musical wind instruments; and the well-known pampas grass (*Cortaderia*). Two kinds of pampas grass native in South America are cultivated. The commoner one

A GRASS NEW TO ILLINOIS
White fruiting spray of Miscanthus sacchariflorus.

(*C. selloana*), found on the plains from Brazil to Argentina and Chile, is a beautiful tall grass often seen on lawns as an ornamental plant in the warmer parts of the United States. The other (*C. rudiuscula*), from Argentina, is only occasionally cultivated. Many wild species of the genus are found in various parts of the Andes mountains of South America.

SUGAR CANE ALSO ORNAMENTAL

Sugar cane (*Saccharum officinarum*), cultivated throughout the warmer parts of the world for its stems that are crushed for sugar, is a tall grass with attractive plume-like flower clusters of ornamental value.

Our own wild common reed grass, native in the Chicago region and other parts of the United States (*Phragmites communis* var. *Berlandieri*), is a striking and handsome tall plant with stout stems and smooth horizontally-spreading large leaves. At the summit of its stem is a large plume-like tawny cluster of flowers that is quite attractive and usable as winter decoration. Two other genera are cultivated as ornamentals. One of these, *Neyraudia reynaudiana*, native in southern Asia, resembles somewhat our common reed grass and occasionally is planted in the southern United States. The other, *Ampelodesmos mauritanicus*, is a native of the Mediterranean region and is likewise occasionally planted for ornament. Some of the above-mentioned genera (*Arundo*, *Ampelodesmos*, *Cortaderia*, *Neyraudia*, and *Phragmites*) belong to the tribe *Festuceae*, to which the fescue (*Festuca*) and brome (*Bromus*) grasses belong.

How pineapples grow is illustrated in an exhibit in the Hall of Plant Life (Hall 29).

MODERN DESIGN IS 'OLD STUFF' TO SOUTH SEA ISLANDERS

By CHRISTINE TARDY

MODERN DESIGN—that trend toward the simple and functional that is changing our ideas of good taste and beauty—turns out to be no new thing after all. While it's fairly new to us, far-away and little-known cultures have had this notion of beauty for centuries, it is pointed out by Dr. Alexander Spoehr, Curator of Oceanic Ethnology.

Take, for example, the kind of utilitarian art turned out in some of the South Pacific islands. Anthropologists refer to three broad culture areas in this vast region—Melanesian, Micronesian, and Polynesian—all of which follow styles of design strikingly similar to what is now being shown as the latest thing in the smartest art shops and decorating studios.

The terms "Melanesian," "Micronesian," and "Polynesian" refer to three different groups of people who are, within each designation, of roughly similar racial type and culture. But the terms also refer to broad geographic areas. Melanesian cultures are located on islands in an area to the north and east of Australia, including New Guinea and the Solomon Islands. Micronesian cultures lie farther to the east and more north of the Melanesian islands, and they include the Caroline Islands, the Marshall Islands, and the Marianas. The rest of the South Pacific is Polynesian, all the way from Hawaii down to Easter Island and back west to New Zealand.

FUNCTIONALISM DOMINANT

The customs of the people in this vast area vary tremendously from island to island within the geographic groups, of course, but nonetheless a basic idea behind their artistic preference—functionalism—can be traced throughout the area. It is this respect for simplicity that gives much of Oceanic art its consistent style—a style we are just beginning to value in our own culture.

The Melanesian craftsman or artist has his own variation of the functional theme, which makes it possible to identify a piece from this area. He goes in for an art style that is largely derived from the natural forms of the things he sees around him, but the forms take their style from exaggeration and distortion. A native of New Guinea will carve a human likeness on a wooden bowl, but he'll make it a fierce exaggeration by elongating the nose, giving the head a point, stretching or shrinking the body proportions, and topping it all off with a paint job that emphasizes the over-all effect and is not mere imitation of nature. Hall A (Peoples of Melanesia) contains the most impressive and finest collection of Melanesian art possessed by any museum in the country.

Polynesians stick closer to simplicity in the things they make than do the Melanesians—simplicity of form at least. But on many Polynesian islands they decorate everything with intricate, geometric patterns. Even a rope wrapped around the handle of a weapon to give a better grip will be wound in such a way as to form a design. In many cases, designs are not there just to please the eye. Polynesians have intricate symbolic representations of their deities, and special motifs are reserved for certain objects. Everything the Polynesian makes, although it may be covered with carved or painted designs, is the essence of functional form.

CAN YOU TELL WHOSE CULTURE IS WHOSE?

The South Sea island girl (left) holds an ancestor figure carved by Easter Island natives. The bowl in front of her was used by Samoans to serve kava, a mildly narcotic liquor used on ceremonial occasions. Also shown is a food dish from the isle of Matty. On the right an American girl compares somewhat similar objects from American factories, as recently shown at the Gift Show in the Merchandise Mart. The bowls are plastic, but the sculpture is wood (mass-produced). Posed at the Museum by Norma Calderon and Pat Brand, featured players in the cast of "South Pacific."

STREAMLINING CENTURIES AGO

The art style found in Micronesia parallels our own society's *avant-garde* design trend more than either Melanesia or Polynesia does. The Micronesian craftsman uses very little surface decoration on the things he makes, and he relies mainly on the beauty of functional form for eye-appeal. His canoe is a perfection of functional streamlining, and he was several hundred years ahead of us in his appreciation of what streamlining can do for efficiency. The household utensils he makes would be the envy of any up-to-date woman, who would be more apt to show them off as *objets d'art* than use them in the kitchen (at that, they would probably be more efficient than some of the things she *does* use in her kitchen). The exhibits in Hall F (Peoples of Micronesia and Polynesia) show how efficiently simplified design functions for these peoples.

The paradoxical part of it is that the South Sea islander has gone in for this sophisticated style as long as anyone knows, working from solid hunks of wood and carving with sea shells or shark's teeth, while our own tastes did not accept this functional simplicity until the advent of the machine age—an age that could mass-produce all sorts of

complicated shapes and designs with none of the problems the Pacific Islander would run into if he tried to get fancy. Which is to say—now that we have easier ways of making fancy things, we are beginning to appreciate the beauty of a simple form well executed—something discovered centuries ago by these machineless island cultures.

FREE MOVIES FOR CHILDREN ON SATURDAY MORNINGS

The annual Spring Series of free motion-picture programs for children presented on Saturday mornings by the Raymond Foundation will begin on March 1 and continue each Saturday during March and April. Nine programs, each to start at 10:30 A.M., will be presented in the James Simpson Theatre of the Museum. On three of the programs the explorers who conducted the expeditions on which the films were made will make personal appearances to talk to the children, and on a fourth the story of the film will be told by Miss Harriet Smith of the Raymond Foundation staff.

Children may come alone, accompanied by adults, or in groups from schools or other assemblage points. No tickets are needed.

Following is an outline of the programs:

March 1—CAPTURING JUNGLE BABIES
The "Tiger Man" in South America
Talk by Sasha Siemel

March 8—ANIMAL STORIES
The story of a woodchuck and other animals
Also a cartoon

March 15—MOUNTAIN DWELLERS
How people live in the mountains of Lapland and Switzerland
Also a cartoon

March 22—INTO CENTRAL AUSTRALIA
The story of an expedition
Talk by Alfred M. Bailey

March 29—REASONS FOR THE SEASONS
Story of changes in the weather
Also a cartoon

April 5—SURVIVAL OF THE FITTEST
The struggle for life by animals and plants
Talk by Peter Koch

April 12—HUDSON BAY ADVENTURE
Indians, fox-trappers, and animals
Talk by C. J. Albrecht

April 19—VOICE OF THE PRIBILOFS
Where the huge seal-herds gather
Also a cartoon

April 26—SIMBA
Story of an African lion hunt photographed by Martin Johnson
Talk by Harriet Smith

HOW ANIMAL VOICES SOUND TO FOREIGN EARS

BY AUSTIN L. RAND
CURATOR OF BIRDS

When in El Salvador recently, I found that the common barnyard animals had much the same voices as the ones with which I was familiar in the United States. But when I saw their utterances written down it was another matter. The sounds written in Spanish sometimes looked as different as the names of the animals written in Spanish. Take the donkey for example (or "burro," as they call it). In English we call its "song" "Hechaw!" In Spanish they wrote it for me "Aja! aja! ija! ija!"

There were some German scientists at the Instituto Tropical de Investigaciones Cientificas where I was working, and for comparison I asked them to write for me what the same animals said in German. The burro says "Iha! iha!" in German. Despite the difference in the appearance of these words, when they were pronounced by the various nationalities they sounded very similar. But when they were pronounced by the burro itself, the Spanish version was awarded the prize for being the best rendition of the beast's voice.

The cat's "miau, miau, miau" in Spanish, "miau, miau" in German, and "meow" in English were all very similar in appearance as well as sound. The duck's voice came out differently. In Spanish it was "cuá, cuá, cuá," in German "wack, wack," while in English the initial "cu" or "q" sound of the Spanish and the final "k" sound of the German are united into "quack." The voice of the hoot owl came out much the same in pronunciation, though it looked different written in Spanish "ju," in German "hu," and in English "who."

The cow's, the pig's, and the frog's voices were also rather similar in the three languages: the cow's in Spanish being "meu, meu, muuu," in German "müh müh," and in English "moo"; the pig's, "grup-grup, wink," "óuik, óuik," and "grunt, oink"; and the frog's, "cruac, croac, croac," "quak, quak," and "croak." The barnyard rooster has a difficult voice to transcribe in letters. In Spanish it was "quiquiriguiiii," in German "kickeriki," and in English "cock-a-doodle-doo." After listening to the various renditions by the various nations I could see how each rendition came into being, but as for deciding which was closest to the original I hesitated to choose.

When it came to the dog, the discrepancy was surprising: in Spanish it was "guán, guán, guán"; in German "wau, wau"; and in English "bowwow." The German and the English are close enough. But though I went outside and listened to the dogs in Salvador, never did they seem to say "guán, guán, guán," though I must admit that neither did they seem to say "bowwow."

VOICES ACROSS THE BORDER

South of the border many animals seem to say the same thing, but when the sounds are written in the respective languages, English and Spanish, they usually come out quite differently. Cartoon by Ruth Johnson.

Beards Ornamental Off Face As Well as On It

In the not-distant past the white beards of old men were highly valued for the making of ornaments among the natives of the Marquesas Islands in the South Pacific. Shaved off, the beards were worn as plumes on the head. When a man too young to grow a white beard wanted to make one of these ornaments, he prevailed upon one of his elderly relatives to part with his hirsute adornment for the purpose. If he had no relative willing or able to supply his need, he often would hire an old man outside his family to grow a beard for him.

Visiting Hours Extended

Effective March 1, and continuing through April 30, Museum visiting hours will be 9 A.M. to 5 P.M. (closing has been at 4 P.M. during the winter months). On May 1 and continuing through Labor Day (September 1) the hours will be extended another hour, 9 A.M. to 6 P.M.

French Egyptologist Studies Here

Dr. Jacques J. Clère, Egyptologist from Paris, who is an exchange professor at Brown University, recently visited the Museum to study inscriptions in the Egyptian collection.

SATURDAY ADULT LECTURES TO BEGIN MARCH 1

Nine free illustrated lectures for adults on science, travel, and exploration will be presented in the Museum's annual Spring Course, which opens on March 1 and will continue on each Saturday afternoon throughout March and April. The lectures, to be given in the James Simpson Theatre of the Museum, will begin at 2:30 P.M. Color motion-pictures will accompany each lecture.

Limited accommodations make it necessary to restrict these lectures to adults. Members of the Museum are entitled to reserved seats on application. For children, free motion-pictures will be presented on the mornings of the same Saturdays by the Raymond Foundation.

Following are the dates, subjects, and lecturers:

March 1—CAPTURING JUNGLE BABIES
A jaguar hunt with bow and arrow in Brazil
Sasha Siemel

March 8—SHEEP, STARS AND SOLITUDE
The epic of American herders in the West (Repeated by request)
Francis R. Line

March 15—QUEEN OF THE ISLANDS—BERMUDA
Coral reefs, game fishing, exotic flowers
Austen West

March 22—STEPPING STONES ACROSS THE PACIFIC
The isles of Oahu, Midway, and Wake
Alfred M. Bailey

March 29—WHERE THE DEER AND THE ANTELOPE PLAY
Wildlife of the Great Plains and the Rockies
Cleveland P. Grant

April 5—OUT OF THIS WORLD
Big Bend, our newest national park
Peter Koch

April 12—HONOLULU, U.S.A., AND THE MAGIC ISLES
Volcano-shadowed gem of the Pacific
C. J. Albrecht

April 19—JOURNEY INTO THE FOREST
An American jungle turned inside out
Henry Briggs

April 26—TWO TICKETS TO TIMBUCTOO
A motor safari in Africa
Kenneth Richter

No tickets are necessary for admission to these lectures. A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats. Requests for these seats should be made in advance by telephone (WAbash 2-9410) or in writing, and seats will be held in the Member's name until 2:25 o'clock on the lecture day.

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.)*

THE TRUTH ABOUT SNAKE STORIES. By Karl P. Schmidt. Chicago Natural History Museum Press, Popular Series, Zoology No. 10, February, 1952 (reprint of 1929 edition, with revisions). 23 pages, 10 text-figures (new in this edition). Price $0.20 (plus 3 cents postage on mail orders).

First published in 1929, *The Truth About Snake Stories* by Karl P. Schmidt, the Museum's Chief Curator of Zoology, is a charmingly written debunking of common fallacies. It has long been one of the most popular pamphlets published by the Museum. This new edition is embellished with a cover design by Douglas E. Tibbitts, Staff Illustrator, and a series of ten delightful cartoon text-figures by Miss Margaret Bradbury, Artist of the Department of Zoology.

It is Chief Curator Schmidt's contention that "the real truth about snake stories is that most of them are untrue." He proceeds to expose the absurdities in such widespread myths as those of joint snakes or glass snakes, hoop snakes, milk snakes feeding themselves from the udders of cows, and mother snakes swallowing their young to protect them from danger. He punctures many widely held beliefs about rattlesnakes, tells why the drinking of whisky is completely wrong as a remedy for bites of poisonous snakes, and discusses such subjects as snakes charming their prey, snakes being charmed by human beings, the psychology of the fear of snakes, and the facts about viviparous and egg-laying snakes.

Pottery of Madagascar Royalty

An odd storage jar that belonged to the last king of the Betsileo tribe in the south of Madagascar (on exhibition in Hall E) is valued as an extremely rare piece of clay pottery. It is probably the only one of its kind still in existence. The vessel, collected some years ago by a Museum expedition, was used for storing the royal supply of rice, chief staple food of the Malagasy. It has a curious type of design fashioned in strips of clay afterwards fastened to the outside of the jar, which was then fired.

GIFTS TO THE MUSEUM OF PAST MONTH

Following is a list of the principal gifts received during the past month:

Department of Botany:

From: Bishop Museum, Honolulu, Hawaii, T.H.—32 unmounted specimens of Cheirodendron; Department of Geology, University of Chicago—122 miscellaneous phanerogams; Dr. Earl E. Sherff, Chicago—32 phanerogamic specimens, Georgia.

Department of Zoology:

From: Argentino A. Bonneto, Santa Fe, Argentina—a collection of gravid branchiae of seven species of fresh-water clams, Argentina; Chicago Zoological Society, Brookfield—a birdskin (*Struthio*); Dr. William J. Hamilton, Jr., Ithaca, N.Y.—a hairy-tailed mole, New York; Harold C. Hanson, Urbana, Ill.—a collection of sea shells, Flagstaff Islands, Arctic Canada; Leslie Hubricht, Danville, Va.—23 salamanders, North Carolina, South Carolina, and Virginia; Miguel L. Jaume, Havana, Cuba—a collection of land shells, Cuba; T. Pain, London, England—a collection of fresh-water shells.

Library:

From: Charles B. Cory, Homewood, Ill.; Cyril F. dos Passos, Mendham, N.J.; Paul C. Standley, Tegucigalpa, Honduras; Karl P. Schmidt, Homewood, Ill.

Division of Photography:

From: Clarence B. Mitchell, Chicago—3 color photographs; Emmet R. Blake, Evanston, Ill.—881 negatives of animals, scenes, etc., Venezuela and Guatemala.

NEW MEMBERS

The following persons became Museum Members from January 21 to February 15:

Benefactor

Mrs. Stanley Field

Contributors

Mrs. Sherman C. Bishop, Mrs. Daniel W. O'Dell, Dr. Charles H. Seevers

Associate Member

Dr. Gervaise P. Pallasch

Annual Members

Mrs. Eugene T. Berry, James W. Close, Mrs. Corina Melder Collier, Mrs. Donald L. Colwell, John A. Cuneo, John H. Darby, Dr. Stanley Fahlstrom, Kenneth M. Fiske, Anton G. Florian, Miss Margaret E. Froning, Edgar S. Gage, S. W. Goodenough, Dr. Edwin L. Gustus, Herman F. Hajen, Mrs. Evelyn F. Hall, E. Edgerton Hart, R. H. Hauger, Clarence Hoffmann, Dr. Arthur Loewy, Samuel Morgan, Mrs. David G. Moyer, Dr. George H. Otto, Miss Olive Petro, Mrs. Louis J. Reisch, Norman Ruby, J. Robert Shanahan, Robert Somerville, J. E. Sullivan, William W. Sutherland, Warren Wetherell, Paul B. Zaring

Luncheons are served in the Museum cafeteria.

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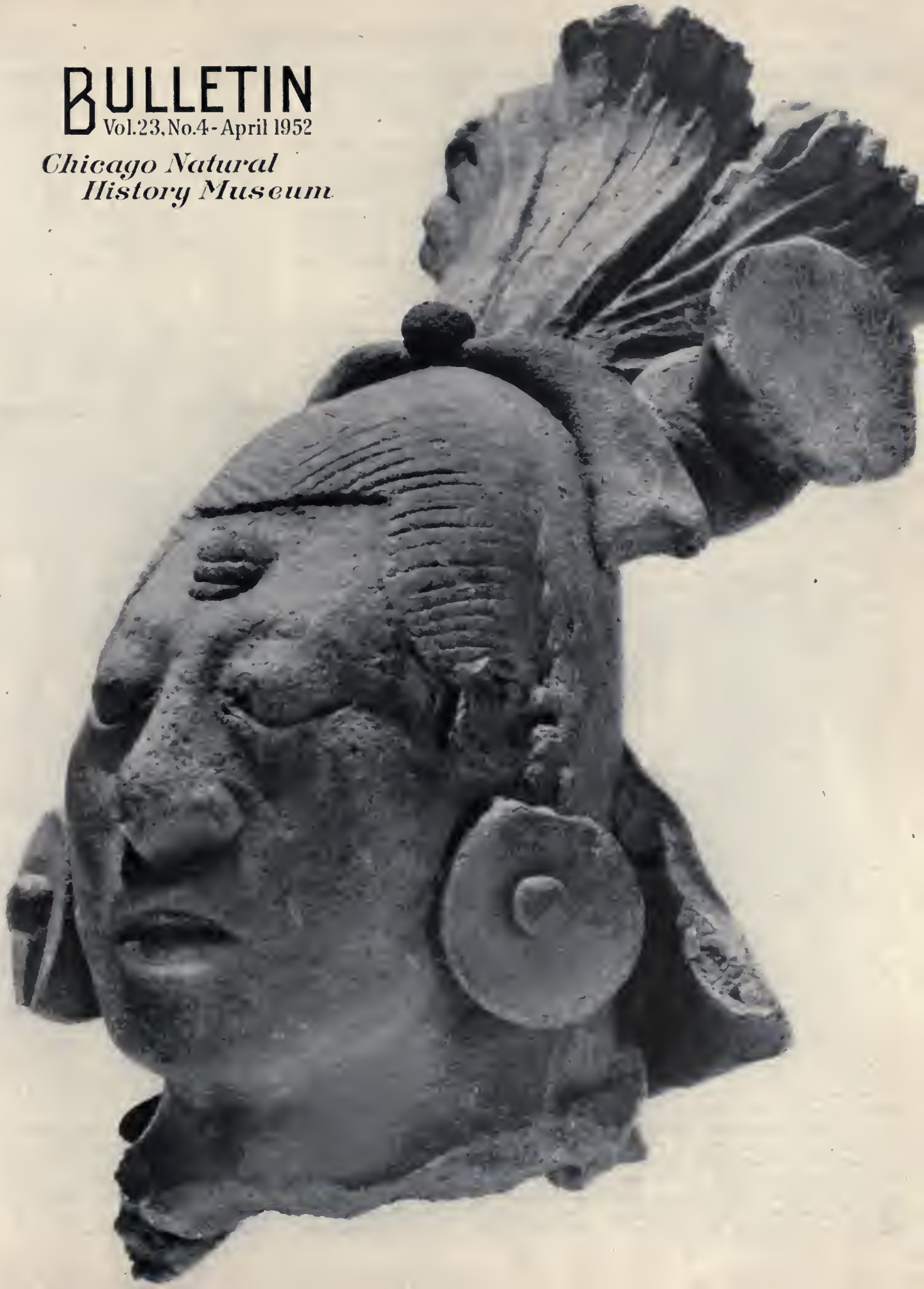

Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

THE ETHICAL VALUES IN NATURAL SELECTION

Theories of evolution are as old as man's serious thinking about the world in which he finds himself. Beginning with the ancient Greek philosophers, there were eager proponents of the idea that animal and plant forms were the result of the operation of natural causes and of a long and complicated history of gradual development for which the word *evolution* was the best expression.

The theory gained little adherence, however, until Darwin demonstrated the operation of simple existing processes in nature that explained not only the mode of evolution but its visible results. This was sketched by him in the world-shaking *Origin of Species* published in 1859. The full title of this work is *The Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life.* The "struggle for life" was soon altered to the "struggle for existence."

The theory of natural selection rapidly gained wide adherence, but quite independently the conviction grew that the evolution of living creatures from simple origins to their present complexity affords a *frame of reference* for all of the facts and relations of biology. Indeed, new facts and new ideas have immediately fallen into place in this framework ever since, so that Darwin is often thought of as the very originator of the idea of evolution because he established evolutionary thinking on so firm a basis.

There has been a long controversy in the highest biological circles over the effectiveness of natural selection. This cannot be elaborated here, except to report that modern students of the origin of species have returned to the conviction that it is the main operational principle by which the diversification and adaptation of animal and plant forms have taken place. In the first years of active discussion of the "struggle for existence" this was often envisaged in terms of the ruthless elimination of the weak by the strong, of the exaltation of might, and of a "nature red in fang and claw." When such ideas were applied to human society, there were ready adherents to the idea that might makes right in human affairs, and not a few of the theoretical warmongers of recent history have made the operation of a natural law of remorseless struggle a justification for war among the nations.

The insight that the natural processes of selection might operate in the animal world to select the very features that we think of as ethical in our own experence was slow in spreading. Darwin fully recognized the principle of selection of whole groups and thus of such virtues as loyalty and co-operativeness, for he faced the problem of the origin of those insect societies in which altruistic behavior appears as a governing principle. A society in which the old and the weak might be preserved instead of eliminated might have an internal strength that could not be matched by a ruthlessly destructive one.

There has now been demonstrated a whole series of survival values in societal aggregation, with the recognition that there is an adverse effect throughout the Animal Kingdom of *undercrowding* as well as of *overcrowding*. Co-operation appears as a guiding principle of evolution that pervades not only every social aggregation but even the natural animal and plant communities in which weak and strong and predator and prey exist together. Thus the very values summed up in ourselves as *ethical* are foreshadowed in all animals and plants.

This aspect of evolution has been discussed by Warder Clyde Allee in a work for the general public under the title *The Social Life of Animals.* It has now been renamed, for a new edition, *Co-operation Among Animals with Human Implications.*

KARL P. SCHMIDT
Chief Curator of Zoology

THIS MONTH'S COVER

Shown on the cover is a modeled clay head from a Maya figurine. It was found on the island of Jaina off the west coast of Yucatan, and dates probably from the 8th or 9th century A.D. This head of an ancient Maya citizen is four inches high and the original figure when complete is thought to have been about twelve inches high. The disc-shaped ear ornaments are painted blue to represent jade. This fine example of Classic Maya sculpture is part of the collection recently received by exchange from the National Museum of Mexico (*see page 3*)**.**

A TAX PURGATORY

March 17, which took the place this year of March 15 as the dreadful date, is past, but for most people the income tax will continue as a thorn without roses throughout the year. Those who are on payrolls will feel its sharp point in every weekly, biweekly or monthly paycheck; most of those who are self-employed will be wounded on those other terrible quarterly 15th-of-the-month dates in June, September and January (1953) to which December's jolt is ordinarily deferred.

Taxes were regarded seriously in old China, too, years before the present regime. Here is a list of punishments prescribed for tax evaders and those who cheat on the amount of taxes paid (and, O, yes, culprits were supposed to be subjected to *all* of these in succession, not just one):

1. The delinquent taxpayer is hung beside a pool and water is continually poured over him.
2. He must kneel on chains and bamboo splinters.
3. His hands are scalded with boiling water.
4. His sinews are cut and his bones pulled out.
5. His shoulders are pricked with a trident and the skin rubbed with a hard iron brush.
6. Holes are bored in his flesh.
7. He must sit upon spikes (upright).
8. He must wear iron clothes.
9. He is crushed under heavy timbers, stones and huge clods of earth.
10. His eyes are plucked out.
11. His mouth is choked with dust.
12. He is perpetually dosed with "abominable drugs."
13. He is made to slip on oiled beans, constantly falling down.
14. His lips are painfully pricked.
15. His body is buried under gravel with the head protruding.

These tortures for failure to pay taxes are however, merely imaginary ones enacted in the tax evaders' purgatory of an ancient Chinese religious drama showing ten purgatories. The drama is represented in the Museum by an exhibit in Hall 32 of the Department of Anthropology.

NOTABLE MEXICAN ANTIQUITIES RECEIVED BY EXCHANGE

By DONALD COLLIER
CURATOR OF SOUTH AMERICAN ETHNOLOGY AND ARCHAEOLOGY

RECENTLY the Museum acquired through an exchange with the National Museum of Mexico an extensive and important collection of Mexican antiquities ranging in age from the second millenium before Christ to the Spanish Conquest.

The Mexican collection was selected to supplement and fill gaps in this Museum's

ARCHAEOLOGICAL TREASURE

Stone mask from Teotihuacan, Period III, circa A.D. 500. It is an exceptionally fine example of early American carving, and was obtained by this Museum in an exchange collection from the National Museum of Mexico.

Middle American collections. For this reason it contains typical series of artifacts from different regions and cultural horizons, as well as an ample selection of aesthetically exciting sculptures in stone and terra cotta and precious ornaments of jade representing the high artistic achievements of the ancient Mexicans. Included are figurines, pottery, and tools from the Archaic cultures of the Valley of Mexico; tools, pottery, figurines, and ornaments from the Classic cultures of Teotihuacan in the Valley of Mexico and Monte Alban in Oaxaca; and tools, pottery, smoking pipes, figurines, and ornaments from the Toltec and Aztec cultures of the Late period. The prehistoric cultures of western Mexico and the Mexican Gulf Coast are also represented.

Sent to Mexico in return were ethnological and archaeological specimens from North America and Oceania that the Museum could spare from its large collections in these fields.

The exchange was initiated three years ago with the visit to Chicago of Dr. Daniel F. Rubin de la Borbolla, Director of the National Museum of Mexico, and Miguel Covarrubias, well-known Mexican artist and archaeologist who holds an honorary appointment as Research Associate in Primitive Art in the Department of Anthropology of this Museum. Dr. de la Borbolla wished to obtain Oceanic and North American specimens by exchange in order to increase the scope of the exhibits in the National Museum and to use in the teaching program of the National School of Anthropology, which maintains a close collaboration with the National Museum. This Museum welcomed the opportunity to add to its Mexican collection, and an exchange arrangement was agreed upon. Later, Sr. Covarrubias returned to Chicago to work with the staff of the Department of Anthropology in making the selection of the material needed by the National Museum.

SELECTED BY CURATORS

The following year the Museum, with the aid of a generous grant from the Viking Fund, Inc., sent Dr. Paul S. Martin, Chief Curator of the Department of Anthropology, and the writer to Mexico to choose the Mexican collection to be received in exchange. After a month of hard work in the storerooms of the National Museum, interspersed with week-end trips to important archaeological sites and current excavations, the exchange collection of Mexican material was selected and assembled. During this time every facility of the Mexican museum and the whole-hearted co-operation of its staff were extended to us.

Of particular interest is a collection of pottery and figurines from the important site at Tlatilco in the Valley of Mexico. The Tlatilco culture was primarily of Middle Archaic type. Charcoal from this site has yielded a radiocarbon date of 1200–1400 B.C. The finds at Tlatilco are important because they show a higher technological and artistic development in the Middle Archaic than was previously suspected. Furthermore, the stylistic and technical connections of Tlatilco culture with the mysterious, and presumably early, Olmec or La Venta culture of southern Vera Cruz and Tabasco, as well as less specifically with the Hopewell culture of the eastern United States, are of great significance.

The sites of Teotihuacan in the Valley of Mexico and Monte Alban to the south in the Valley of Oaxaca tell the stories of two of the most important Classic cultures in Mexico. These were great ceremonial and administrative centers containing temples atop truncated pyramids faced with stone and stucco. The largest of these pyramids is the Pyramid of the Sun at Teotihuacan, which is 740 feet at the base and 205 feet high. Here also were the tombs of priests and kings in which were placed offerings of fine ceramics and carved jades. Teotihuacan was first settled at the beginning of the Christian era and flourished until the 7th or 8th century.

For many years archaeologists believed that Teotihuacan was the capital of the Toltecs, whose exploits and cultural achievements are related in the Mexican codices and traditional histories. But recent excavations have proved that Teotihuacan was abandoned and in ruins when the warlike Toltecs established their capital in the 9th or 10th century at Tula on the northern edge of the Valley of Mexico. Monte Alban was begun several centuries earlier than Teotihuacan, during the Late Archaic period, and served as a great ceremonial center for nearly 2,000 years. During its Classic phase it was the seat of the Zapotec culture, and in late times its tombs were re-used by the Mixtecs, who conquered Oaxaca in the centuries before the Spanish conquest.

Archaeologists have been able to divide the histories of these great sites into cultural phases or periods by studying the layers of

ZAPOTEC FUNERAL URN

Example of pottery from the state of Oaxaca, Mexico, dating about A.D. 500. The figure wears a mask depicting a tiger. This is one of the objects obtained by this Museum in an exchange with the National Museum of Mexico.

the pyramids and buildings, and the position and contents of tombs. The styles of pottery changed from one phase to another, and these different ceramic styles serve as convenient time markers or phase identifiers. In selecting the Mexican collection it was possible to secure type examples of those styles that, when combined with the specimens already in the Museum's collection, give a complete picture of the ceramic sequences at Teotihuacan and Monte Alban.

(*Continued on page 7, column 1*)

A FAMOUS COLLECTION OF BEETLES COMES TO THE MUSEUM

By CHRISTINE TARDY

A LITTLE BEFORE the turn of this century, a public official in Austria took up a hobby. Several decades later the results of his hobby had grown into a major systematic collection of such importance to science that they were moved in their entirety across the ocean to Chicago Natural History Museum.

Dr. Max Bernhauer collected beetles. His legal and government duties as a *Notar* in Vienna had nothing to do with entomology, so his study of beetles was purely an avocation. However, Dr. Bernhauer didn't collect beetles the way people collect stamps, and he didn't keep them as pets. It happens that the world contains so many kinds of beetles their classification is not even nearly completed. These tiny creatures—the group known as Coleoptera—represent the largest order of insects on earth, and it will be a long, long time before science is acquainted with all of them.

A TYPICAL ROVE BEETLE

The picture of this particular species of the family Staphylinidae is enlarged approximately eight times life size. Other species range from a twenty-fifth of an inch to an inch and a half in length.

Dr. Bernhauer was interested in doing what he could to contribute to the world's knowledge of this one phase of nature. He studied the specimens of a family called Staphylinidae (rove beetles) and published his first paper about them in 1898. After that, his writing was prolific and at the time of his death in 1946 he had published reports on some 290 separate studies. These included contributions to the monumental catalogues of the *Catalogus Coleopterorum*—a shelf-full of 30 huge books listing *only the names* of the beetles, with two of them devoted to the Staphylinidae alone.

Dr. Bernhauer gave us knowledge of at least 4,900 new species, and his collection included approximately 100,000 beetles—a staggering number for one man to have collected in his lifetime. His collection is of special value to entomology because it contains type specimens of thousands of species. After an animal has been described for the first time, that description serves as a means of identification for all other animals like it, and the originally described specimen becomes a "type." Many descriptions are too incomplete for other zoologists to be certain about which species is referred to, so being able to study the original "type" specimens helps clear up the difficulties. The Bernhauer collection contains not only the types of most of the species that Bernhauer himself described, but many types of species described by other authors as well.

Scientific investigation, aimed at enriching the world's knowledge of itself, goes on in many places. Universities, museums, government bureaus, institutes for special purposes, and lately, even big industries, have all contributed. For a long time many museums served primarily as the resting places of collections begun by private individuals, institutions, or expeditions. Now these collections are being put to work by museums in a broader way. No longer are exhibition collections simply accumulated behind glass to be observed as natural curiosities. Museums have large staffs of research scientists behind the scenes who make extensive use of collections such as the beetles recently acquired by Chicago Natural History Museum.

Where Dr. Bernhauer left off, the Museum takes over. Its scientists carefully study the specimens he collected and gradually build up a fuller understanding of this realm of nature. This is one of the important functions of a modern museum—to preserve such collections and to continue learning from them, and particularly to make them available to scientists of other institutions who previously had no access to them.

The Bernhauer collection of beetles happened to be of particular interest to this Museum. One of the Museum's research associates in insects, Dr. Charles H. Seevers, is an authority on the family Staphylinidae. Access to this collection enables him to examine certain Old World forms which had been known to him only as names, and several of the studies he is making will be amplified by study of the Bernhauer collection. Thus the collection was put to use as soon as the Museum received it.

Although acquiring a collection is sometimes a very simple matter (collectors frequently have given their collections to museums), occasionally the purchase of a large collection may be a very complicated transaction. In this case, post-war European economic conditions cast some of the aspects of an international diplomatic mission over the acquisition of the Bernhauer beetles.

When Dr. Bernhauer died just after the war, his valuable library and collection went to his daughter, Dr. Ilse Himmel. She wanted to dispose of the collection where it would be useful to science, so she engaged an agent to help her. It was through her agent, Dr. Johannes Vondrak, that Chicago Natural History Museum first learned the collection was to be sold. After preliminary negotiations, the Museum arranged for Rupert L. Wenzel, Curator of Insects, who was about to go to Europe to study beetles in various museums, to supervise the conclusion of the transaction.

Things got off to a bad start for Mr. Wenzel even before he left the country. When he was ready to board ship in New York, the longshoremen's strike was in full swing and it looked as though it might take weeks to get passage to Europe. At the last moment he was able to go because his ship, which was to carry a group of diplomats who *had* to get to Europe fast, was permitted to sail despite the strike. But Mr. Wenzel's luggage was left behind on the dock. He arrived in Europe in the middle of winter without any woolen underwear—a major tragedy to one's comfort in the unheated buildings of fuel-short European cities.

Except for this mishap, which proved to be a rather persistently disconcerting factor,

STAPHYLINID BEETLES INCLUDE ODD KINDS

The Staphylinidae or rove beetles are chiefly slender forms with short wing covers (see illustration) that range in length from one twenty-fifth of an inch to an inch and a half. Most species live in decaying animal or vegetable matter and there feed upon other insects. Some of the most remarkable insects known are the rove beetles that live with ants or termites; these include certain species that resemble the host ant or termite so closely that only an expert can distinguish between them. The family name, Staphylinidae, is derived from a Greek root that means merely "a kind of insect."

This information is supplied by Rupert L. Wenzel, the Museum's Curator of Insects. The accompanying article tells of his experiences in Europe on a successful mission to obtain the huge and scientifically important Bernhauer collection of beetles for this Museum.

it appeared as though everything would go along smoothly once Mr. Wenzel arrived in Austria. He was met at the Vienna airport by Dr. Himmel and Dr. Vondrak, and shortly afterward he met Dr. Josef Eiselt of the University of Vienna and the Naturhistorisches Museum, who had agreed to assist with packing and shipping the collection. Dr. Vondrak had decided the collection belonged in an American museum. He felt it would be safer than in a European museum, because of the recent ravages of war and the insecurity which has prevailed ever since. Further, Dr. Vondrak seemed motivated by a mystical faith in the future of America.

All Europe, of course, is in the throes of post-war recovery, with concomitant upset economic stomachs. In attempting to cope with the situation, which has left Austria in a particularly insecure spot, rigorous controls over the economy have been established. For this reason, getting the Bernhauer collection out of Austria became a complicated business.

PROCEDURAL TANGLES

It was necessary to obtain a government permit that would allow the collection to leave Austria for America. Such permits are issued with caution because the fluttering economic situation has caused individuals to try for black market exchange rates. In order to stabilize the situation, everything must be cleared through the Austrian National Bank. Further, it had to be shown that no one was trying to evade government regulations. Unfortunately the permit when obtained had failed to include the Bernhauer library, so it was now necessary to seek a revised permit to cover the entire purchase. Requests for revised permits are often viewed with raised eyebrows, so getting a new one was another time-consuming matter.

While these complicated negotiations were going on, Rupert Wenzel's nerves were taking an awful beating. On top of everything else, the packing had required the greatest care. The beetles were pinned in wooden boxes with glass tops. Each beetle (thousands!) had to be secured, and the larger ones protected with additional pin-guards, a pin on either side to keep each safely in place. So, Mr. Wenzel and Dr. Eiselt taped their fingers heavily and pinned —and pinned and pinned! After the pinning, layers of cardboard and cotton were placed over the specimens in each box, between them and the glass. As an additional safeguard against the possibility of damage from broken glass, the glass of each box was completely covered with adhesive tape. It took nearly three weeks to get the boxes of specimens ready to be crated.

A TON AND A QUARTER OF BEETLES LEAVES VIENNA

Huge crate containing the important Bernhauer collection is loaded on truck for shipment to seaport on way to Chicago. It was the largest single box of insects ever received in this city, but the size of the collections contained is only a small part of their significance to entomologists.

'ALLES IST VERBOTEN'

The day after the collection had been paid for according to form, and the time for crating the individual boxes arrived, customs officials gathered to supervise the packing. When Mr. Wenzel walked in the door, one of the officials stated bluntly, "Alles ist Verboten!" After all Mr. Wenzel, Dr. Himmel, and Dr. Vondrak had gone through to have everything in perfect order, it was declared "verboten." It seemed that the National Bank permit was not enough—another permit was required from the Foreign Export Commission. So frantic phoning and hailing of taxicabs ensued.

When all the arrangements had been made and it looked as though the shipment would be allowed to leave the country, it was decided to crate all the individual boxes together, making a package so heavy and large that it would require a crane to handle it. That way, it couldn't be thrown around as easily as smaller crates might, and the danger of loss by theft was eliminated. The man who supervised the final crating was the same one who handled the crating of the Viennese art treasures for their American tour, for this job required an equal degree of delicacy. When it was all done, the crate weighed more than a ton and a quarter and measured six by seven by eight feet.

This by no means finished the job. A special railway car was needed to handle the crate on its way out of Austria, through Germany to the port of Rotterdam. From there, a crane loaded it aboard ship and five weeks later, after a delay at the American port of debarkation, it arrived in Chicago.

Now that the Museum has the Bernhauer collection, which turned out to be so much trouble to acquire, the Museum scientists have months of difficult work ahead of them. The new collection will be integrated with the Museum's other beetle collections, and a bibliography will be made of the Bernhauer papers, of which a nearly complete file is now available.

The acquisition of the Bernhauer collection was unusually complicated, but it is an example of some of the problems worked out behind the scenes, with which most Museum visitors are unfamiliar.

FREE MOVIES FOR CHILDREN ON SATURDAY MORNINGS

The Spring Series of free motion-picture programs for children presented on Saturday mornings by the Raymond Foundation will continue each Saturday during April. Four more programs, each to start at 10:30 A.M., will be presented in the James Simpson Theatre of the Museum.

Children may come alone, accompanied by adults, or in groups from schools or other assemblage points. No tickets are needed.

Following is an outline of the programs:

April 5—SURVIVAL OF THE FITTEST
The struggle for life by animals and plants
Talk by Peter Koch

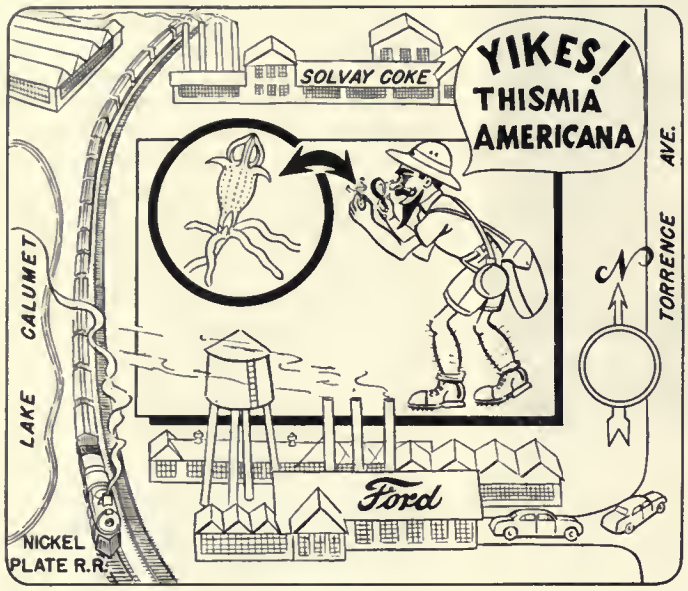
April 12—HUDSON BAY ADVENTURE
Indians, fox-trappers, and animals
Talk by C. J. Albrecht

April 19—VOICE OF THE PRIBILOFS
Where the huge seal-herds gather
Also a cartoon

April 26—SIMBA
Story of an African lion hunt photographed by Martin Johnson
Talk by Harriet Smith

UNIQUE CHICAGO TROPIC PLANT HAS VANISHED

YOU WON'T believe it, but Chicago (with *its* climate!) is famed for the possession of a kind of tropical plant that is found nowhere else in the world. You can't show it proudly to your visiting cousins though, because it can't even be located by the scientists of Chicago Natural History Museum and other institutions interested in botany. They are looking for it, however—and have been ever since 1914.



LOCALE FOR BOTANICAL TREASURE HUNT

Map showing the suspected location of Chicago's mysterious lost plant-curiosity, for which Museum botanists have been searching. Drawing by Museum Artist Douglas E. Tibbitts.

For some reason unknown to science, this tropical plant chose a remote area of Chicago's South Side as its environment, when by rights it should have preferred a jungle anywhere along the equator, Museum botanists explain. The little mystery plant is less than an inch high at full growth and, since it lives on dead matter instead of manufacturing its own food as most plants do, it is white except for a bluish-green flower.

A University of Chicago botany student, Norma Pfeiffer (now a Ph.D. in botany), discovered this tiny "D.P." (displaced plant) back in 1912 when she wandered to the outskirts of the city in search of plants to take back to class for study. When the botanists in the laboratory had a look at it, it was seen to be something entirely new in plant life, unknown in any other part of the world. Worse than that, its nearest relatives were known only in tropical Asia, Panama, Brazil, New Zealand, and Tasmania.

In 1913 and 1914, Norma Pfeiffer and fellow botanists went back to the swampy prairie field where the curious plant had been found, and they were able to bring back a few more specimens in various stages of its life-cycle. Other search parties went out after 1914, but in all the hunting since that year not one other specimen has been found. Just enough had been collected to allow the plant to be classified as belonging to *Thismia americana*, a genus of twenty-three species all found in tropical climates except Chicago's unique South Sider. There weren't even enough extra specimens to permit further study to find out how it got *here*, of all the unexpected places in the world. It just disappeared.

The prairie where it was found is a cause of concern to botanists at Chicago Natural History Museum because the city is rapidly biting off chunks of it. Last summer Dr. Theodor Just, Chief Curator of Botany, and Dr. Julian A. Steyermark, Curator of the Herbarium, organized another expedition into the wilds of south Chicago in an anxious attempt to locate *Thismia americana* once more before the fertile field that yielded it becomes engulfed by the heavy industry surrounding it. No luck this time, either. The only hope of solving the mystery of how *Thismia* got to Chicago and how it survived the winters depends on saving that prairie field.

C. T.

PHOTOGRAPHS OF ANGKOR IN SPECIAL EXHIBIT

By ALEXANDER SPOEHR
CURATOR OF OCEANIC ETHNOLOGY

Today, Indo-China is a major crisis area of the Far East. Though contemporary events in Indo-China receive much attention in the press, not many Americans are aware of the background of history in this far-removed part of the world. During April, the Museum will present a temporary exhibit of photographs documenting the story of Angkor, a spectacular ruined city in the jungles of Cambodia, one of the major provinces of Indo-China.

Angkor was the capitol of the Khmer empire, which was roughly contemporaneous in area with present-day Cambodia. Between the 9th and 14th centuries the Khmer civilization flowered. Angkor became a major metropolis, covering a large area, and embellished by great palaces, monumental walls, and innumerable temples. In the 14th century, the Khmer kings deserted Angkor, probably because their empire was crumbling under the stress of war with Siam and Annam. Angkor's star set and the city became largely deserted, abandoned to the jungle. The brilliant civilization of the Khmers flourished and fell, unknown to the Western world.

During its day, however, it attracted many from outside its borders. Thus an early Chinese visitor to Angkor wrote of the country of the Khmers: "Rice is easily earned, wives easily found; houses easily furnished; business easy to do. Consequently we find people constantly coming to this country."

The modern Cambodians are the descendants of the Khmers. The Museum exhibition is enhanced by photographs, not only of the splendors of ruined Angkor, but of the modern inhabitants of Cambodia. Thus past and present are combined in a single pictorial exposition centering around Angkor.

The Museum has been able to present this exhibit through the co-operation of Ernest Rathenau of New York. Mr. Rathenau, a fine photographer, took the photographs composing the exhibit himself while on an expedition to Cambodia, and has generously lent them to the Museum for the April exhibit.

Flamingoes in the Bahamas Receive Protection

The Society for the Protection of the Flamingo has been formed in the Bahama Islands. Long pink flocks of flamingoes harmonize well with palm trees, and tropical islands. Scenically and aesthetically they grace the Bahamas and the American tropics from Yucatan to the Guianas.

They're large birds, nesting in colonies, and at breeding time are particularly vulnerable to predation by local people who collect them and their eggs for food. The decrease in numbers in the Bahamas has alarmed residents, who are determined that these bizarre and spectacular birds shall continue to ornament their islands. Fortunately the birds are far from extinct, and there seems a large enough stock of them in the Bahamas so that with proper protection, under the eye of the newly formed society, we can expect the flamingoes to multiply and become better known, as one of the charms of the Bahamas.

AUSTIN L. RAND
Curator of Birds

Audubon Lecture April 23 On Nature Near Home

The last of the current season's "screen tours" of the Illinois Audubon Society will be presented in the James Simpson Theatre of the Museum on Wednesday evening, April 23, at 8 o'clock. "Wildlife at Your Doorstep" is the subject of the color films and the lecture which will be given by Howard L. Orians.

MEXICAN ANTIQUITIES—

(*Continued from page 3*)

These type sequences will be important both for research and exhibition purposes.

It was also possible to obtain typical examples of a kind of pottery called Thin Orange ware, which was traded widely in Middle America during the Early Classic period. It has been found at Teotihuacan (period III), at Monte Alban (period III), at Kaminaljuyu, near Guatemala City, at Uaxactun (Tzakol phase), an important Classic Maya site in the Peten of Guatemala, and at other places. Wherever found, this ware has identical characteristics of clay, methods of manufacture and firing, and style, so that there can be little doubt that all examples came from the same source. The place of origin of Thin Orange ware is not known, although the state of Puebla, to the southeast of the Valley of Mexico, appears to be the most likely. Even though the source is not known, the popularity of this pottery as an item of trade over such a wide area serves to tell us which phases of the various Classic cultures were contemporaneous.

These few examples will convey an idea of how useful this new collection will be in the work of the Museum. The collection sent to Mexico will be equally valuable to the National Museum there. In the present day, only by exchange could the two museums have acquired collections of this size and quality. The completion of this exchange is an outstanding event in the histories of both institutions and in the history of international co-operation in science.

Search for Fossils in Texas

Orville L. Gilpin, Chief Preparator of Fossils, and William D. Turnbull, Preparator, will collect fossil mammal remains of Early Cretaceous age in the Trinity formation of northern Texas during April and May. This is a continuation of the work of two field trips conducted in 1950 and 1951, on a site discovered in 1949 by Dr. Robert H. Denison, Curator of Fossil Fishes, and Dr. Rainer Zangerl, Curator of Fossil Reptiles.

STAFF NOTES

Henry S. Dybas, Associate Curator of Insects, will leave early in April to conduct the Museum's California Zoological Field Trip for 1952. Mr. Dybas will engage in collecting the microfauna from leaf mold and from other materials in which he finds the minute beetles of the family Ptiliidae, which are his special interest .... **D. Dwight Davis,** Curator of Anatomy, conducted a seminar in comparative anatomy at the University of Illinois on March 18 .... **Dr. Fritz Haas,** Curator of Lower Invertebrates, has returned to the Museum after about a month of field work in Cuba. He completed the greater part of a study of the mollusk life in Piñar del Rio province where the process of speciation of these animals is in full progress.

Dr. Theodor Just, Chief Curator of Botany, has accepted an invitation to participate as a guest of the French National Research Council in its forthcoming Symposium on *Evolution in Plants* to be held in Paris May 15–20 .... **John Ihle,** illustrator in the Department of Botany, received a purchase award for his print, "The Orange Temple," at the 6th Annual Print Exhibition of the Brooklyn Art Museum .... **Dr. Julian A. Steyermark,** Curator of the Herbarium, addressed a recent meeting of the Oak Park and River Forest Garden Club. His topic was "Wild Flowers and Their Conservation."

Miss Martha H. Mullen, for seven years a member of the editorial staff of the Encyclopedia Britannica, has been appointed Assistant Editor of scientific publications at the Museum .... **Miss Marian Hoffman** has joined the business staff as bookkeeper.

DAILY GUIDE-LECTURES

Free guide-lecture tours are offered at 2 P.M. daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

Tours Sponsored by Tribune

In co-operation with the Museum the *Chicago Tribune* sponsored six special guide-lecture tours of the exhibits on March 8 and 9. The *Tribune* generously used its news columns to inform the public of the special tours, and through its public service office issued tickets to the many applicants who desired to take advantage of the tours. Miss Miriam Wood, Chief of the Raymond Foundation Lecture staff, conducted the parties through the Museum. The tours constituted an introduction to a general program of civic co-operation undertaken by the *Tribune*.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From the *Annual Report of the Director* for the year 1902:

"*Installation, Rearrangement and Permanent Improvements.*—The collections of relief maps formerly occupying Halls 60 and 61 were transferred to Halls 75 and 77, these halls together with Hall 68 having been first entirely renovated and repainted. A shelf with iron railing was built entirely around the walls of the halls to provide a means of supporting and exhibiting the maps. In addition, twenty iron easels, made after designs by the Curator, were provided for the exhibition of maps in the floor space. Four large tables were also provided for displaying small relief maps. In drawers in these tables have been filed the unmounted maps to the number of several hundred. These are now arranged alphabetically and in labeled covers. A total of sixty-two relief maps, large and small, besides globes and wall maps is now displayed in these two halls and the collection is one of the largest of its kind to be found on exhibition in any Museum."

THE VOGUE IN EXHIBITS, 1902

How relief maps were displayed during the Museum's early days in its first building in Jackson Park.

SATURDAY ADULT LECTURES CONTINUE IN APRIL

Four more free illustrated lectures for adults on science, travel, and exploration will be presented in the Museum's annual Spring Course, which will continue on each Saturday afternoon through April. The lectures, to be given in the James Simpson Theatre of the Museum, will begin at 2:30 P.M. Color motion-pictures will accompany each lecture.

Limited accommodations make it necessary to restrict these lectures to adults. Members of the Museum are entitled to reserved seats on application. For children, free motion-pictures will be presented on the mornings of the same Saturdays by the Raymond Foundation.

Following are the dates, subjects, and lecturers:

April 5—OUT OF THIS WORLD
Big Bend, our newest national park
Peter Koch

April 12—HONOLULU, U.S.A., AND THE MAGIC ISLES
Volcano-shadowed gem of the Pacific
C. J. Albrecht

April 19—JOURNEY INTO THE FOREST
An American jungle turned inside out
Henry Briggs

April 26—TWO TICKETS TO TIMBUCTOO
A motor safari in Africa
Kenneth Richter

No tickets are necessary for admission to these lectures. A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats. Requests for these seats should be made in advance by telephone (WAbash 2-9410) or in writing, and seats will be held in the Member's name until 2:25 o'clock on the lecture day.

NEW MEMBERS

The following persons became Museum Members from February 18 to March 14:

Associate Members

Harry J. Bettendorf, Jan M. Pencik

Sustaining Members

Charles G. Vanlandingham

Annual Members

Thomas W. Alder, Max Becker, Anthony J. Blaeser, Walter Colmes, Kevin W. Cronin, Herbert Ehler, Irving Esserman, Mrs. Ruth M. McReynolds Farley, Edward Howard Feinstein, James Fitzmorris, William S. Friedeman, Louis E. Frosh, Norman H. Gerlach, James Grosboll, James A. Hart, L. Edward Hart, Jr., Kenneth G. Hecht, Myron A. Hecht, Melvern M. Hemmen, Miss Elsie Hix, Raymond F. Houlihan, E. J. Knudtzon, Miss Janet A. LaSalle, John F. Lech, Walter Mara, Dr. James W. Marron, Miss Laura M. Merkl, Arden E. Miller, Miss Frances Poe, M. A. Saffir, Marc W. Schwartz, Mrs. J. Russell Scott, Dr. S. J. Shafer, Charles T. Shanner, Charles E. Shannon, Peter M. Shannon, George W. Stewart, David E. Wanger, Jr.

Books

SPRING FEVER

Aids and abetments for that lazy feeling in spring are books with which to relax or to take on rambles through the countryside. Good for reading or for reference material are the following books on sale in the Museum BOOK SHOP:

North With the Spring, by Edwin Way Teale, 1951. Masterfully written and illustrated narrative of a 17,000-mile adventure north with the season. Price $5.

Coast Calendar, by Robert P. Tristram Coffin, 1949. The parade of seasons and life at one place on the Maine coast. $3.75.

The Sea Around Us, by Rachel L. Carson, 1951. A best seller that will live as a classic. $3.50.

Knowing Your Trees, by G. H. Collingwood and Warren Brush. A well illustrated, popular, but comprehensive book on the subject. $5.

Treasure in the Dust, by Frank C. Hibben, 1951. The scattered threads of American prehistory, skillfully woven into a discernible pattern. $5.

Exploring Our National Parks and Monuments, 1951. $2.50. **Exploring the National Parks of Canada,** 1951. $1.50, by Devereux Butcher, the National Parks Association.

Wildlife in Color, by Roger Tory Peterson, 1951, with over 450 full color pictures first issued as conservation poster stamps by National Wildlife Federation. $3.

Wild Flower Guide, by Edgar T. Wherry, 1948. $3.50.

The Insect Guide, by Ralph B. Swain, 1949. $3.

A Field Guide to the Birds, by Roger Tory Peterson, 1947. $3.75.

Museum Members may request a discount from prices listed. Mail orders should be accompanied by payment, including an allowance of 12 cents for postage and handling.

A card for Members' address changes is enclosed with this Bulletin.

GIFTS TO THE MUSEUM

Following is a list of the principal gifts received during the past month:

Department of Botany:

From: Dr. Mary Belle Allen, Pacific Grove, Calif.—25 cultures of algae; Dr. Fred A. Barkley, Chicago—145 phanerogams, Argentina; Dr. E. Lucy Braun, Cincinnati—315 phanerogams, Kentucky; Dr. Virginius H. Chase, Peoria Heights, Ill.—32 bryophytes, Mexico; William A. Daily, Indianapolis—103 specimens of algae, Indiana; Dr. E. Yale Dawson, Los Angeles—67 algae, California and west coast of Mexico; Dr. Violet M. Diller, Cincinnati—11 cultures of algae; Dr. Maxwell S. Doty, Honolulu—308 algae and other cryptogams, North and South America, and Oceania; Dr. R. K. Godfrey, Durham, N. C.—25 phanerogams; Dr. Askell Löve, Winnipeg, Canada—a *Bryoxiphium norvegicum* (cryptogam), Iceland; Dr. Chester S. Nielsen, Tallahassee, Fla.—16 algae, Florida; E. J. Palmer, Webb City, Mo.—321 phanerogams, Missouri; Victor Manuel Patiño, Valle, Colombia—16 specimens of *Tripsacum* and *Theobroma*, and 7 phanerogams, Colombia; Dr. Jacques Rousseau, Montreal, Canada—31 algae, northern Quebec and Arctic archipelago; Miss Lillian Ross, Chicago—10 lichens, Mexico; Dr. Earl E. Sherff, Chicago—42 specimens of *Bidens* and *Dahlia*, Canada and Hawaii; Dr. Julian A. Steyermark, Barrington, Ill.—5,486 phanerogams, Missouri and Illinois; U. S. National Arboretum, Washington, D.C.—5 *Theobroma* (phanerogams), Brazil; Miss Miriam Wood, Chicago—12 lichens, Mexico.

Department of Geology:

From: Willard H. Farr, Chicago—13 specimens of Mississippian crinoids, Alabama; Miss Anna C. Jensen, Western Springs, Ill.—collection of fossilized wood fossil corals, and mineral specimens, various localities; George Langford, Chicago—54 specimens of pygidia of *Proetus channahonensis* Weller, Illinois; Dr. G. Winston Sinclair, Ann Arbor, Mich.—8 fossil invertebrates; Mrs. Claudius Storm, Chicago—collection of rocks and minerals, United States and Europe.

Department of Zoology:

From: Bernard Benesh, Burrville, Tenn.—a frog and 2 lizards, Tennessee; Harry Hoogstraal, Cairo, Egypt—2 frogs, 64 lizards and 8 snakes, Egypt; Robert E. Kuntz, Cairo, Egypt—133 insects, New Hebrides; Albert Lester, Chicago—a star-nosed mole, Chicago; Seymour H. Levy, Chicago—3 horned larks and 3 Lapland longspurs, Nebraska and Wyoming; Dr. Bertha Lutz, Rio de Janeiro—19 frogs, Brazil; Richard J. Mountjoy, Chicago—a snake, Illinois; Albert Pflueger, North Miami, Fla.—model of ocean sunfish (*Masturus lanceolatus*), Florida waters; University of Texas, Austin—33 fishes of two subspecies of darters, Texas; Dr. Harold Trapido, Panama—a caecilian, 175 frogs, 32 lizards, and 43 snakes, Panama; Lieut. (j.g.) William H. Wells, Bethesda, Md.—3 bats and 4 frogs, Venezuela; August Ziemer, Evergreen Park, Ill.—42 butterflies and moths, Wisconsin.

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Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

MUSEUM STUDIES TRACE DISTRIBUTION OF ANIMALS

THE GEOGRAPHIC distribution of animals forms a separate department of both geography and zoology, often referred to as "zoogeography." Botanical geography, or "phytogeography" is the sister science, and these two fields of biological knowledge have fallen almost entirely to museums, since both depend on the accumulation of identified *specimens*. During the past two generations as the universities have turned to the laboratory and to more and more recondite aspects of biology in the researches fostered by them, they have of necessity turned away from museum collections in their departments or have abandoned museum projects altogether. It must be remembered that even 75 years ago every university and college maintained a museum of sorts.

The interest and importance of biological geography is of a high order. When we turn to the details of the distribution of a single kind of animal or plant the questions as to how its present geographic range was established, whence the species came, how it is limited at the borders of its range, and whether this range is expanding or contracting, may drive us to long continued studies of the geological history of the region, of the evolutionary history of the organism, of the climate and weather, and finally of its interactions with and its dependence upon other forms of life.

Current studies are for the most part devoted to rounding out our knowledge of the distributions of animals and plants species by species, for there is still much to learn about the details of the distribution of even familiar creatures. If one remembers the various kinds and degrees of migratory movement of birds and bats, the complexities of studies of geographic distribution may be envisaged. In recent years Clifford H. Pope, Curator of Reptiles, has engaged in detailed studies of the ranges of certain North American salamanders—so detailed, indeed, that it may be said he has personally walked along the range border in question.

For the general outlines of animal geography we are driven to special works and to special research papers, for there has been no comprehensive account of the field since the appearance in 1876 of the two volumes by Alfred Russell Wallace on *The Geographical Distribution of Animals*. This work is almost useless now on account of the changes in classification and nomenclature, as well as in our knowledge of the sciences that bear upon the problems of animal geography, and new syntheses of this subject are much to be desired. It is gratifying that several such syntheses are in progress. The ecological aspect of animal geography was summarized by Richard Hesse, professor of zoology at the University of Berlin, in 1924; this work was translated and prepared for an edition in English by myself, in collaboration with Dr. W. C. Allee of the University of Chicago and it is gratifying to report that *Ecological Animal Geography* has now appeared in a second American edition (1951).

The very different kinds of animals and the very different conditions in the oceans require special methods and kinds of study. The *Tiergeographie des Meeres* by Sven Ekman, published in 1935, affords an overall review of the distribution of marine animal life, and this is now promised in a new edition in English in the near future. Summaries of the historical aspects of the distribution of land animals are still much needed.

Animal geography is essentially a field of pure science, and as such requires no more "justification" than do studies in comparative embryology, or mathematics, or than does the composition of music. It may be pointed out, however, that a knowledge of the native homes of animals has proved to be of the utmost practical importance in combating those animals and plants that have been misguidedly introduced, or have calamitously introduced themselves, in new regions where their native enemies did not keep them in check. To overcome the minute leaf-mining caterpillar that kept the coconut from fruiting for fifty years in the Fiji Islands, it was necessary to trace the origin of the coconut moth to its original home in Malaya and discover the minute parasitic wasps that prey upon it. Control of the prickly pear in northern Australia, which had rendered thousands of square miles of land impenetrable and useless, was accomplished only by the detailed study of the prickly pear in South America, where insect enemies of this cactus were found, which, when introduced into Queensland, proved almost miraculously effective. These two cases of the spectacular success of "biological controls" can be matched in our own country and are, in fact, sufficiently commonplace in economic entomology.

Museum zoologists and botanists may take a proper pride in their share in keeping alive the great, complex and difficult sciences of animal and plant geography.

KARL P. SCHMIDT
Chief Curator of Zoology

THIS MONTH'S COVER

Ani, a scribe who lived in Egypt between 1546 and 1525 B.C., commissioned the preparation of a papyrus, as was the custom, to be placed in his tomb when he died. The vignette on our cover, from the Papyrus of Ani, shows him on his way into the after-life, accompanied in spirit by his wife, Thuthu. Both have their hands raised in adoration, for in the next panel they approach a bird-headed deity whom they must supplicate for Ani to achieve the after-life. This papyrus, a replica of the original in the British Museum, may be seen in the Hall of Egyptian Archaeology (Hall J) of Chicago Natural History Museum. (*Story on page 5.*)

NEW MEMBERS

The following persons became Museum Members from March 17 to April 15:

Associate Members

Fred A. Schaefer, Floyd E. Thelen

Annual Members

William H. Adler, Frank W. Bloom, William H. Allaway, Lyman E. Carpenter, William C. Childs, Albert Christ-Janer, H. R. Clarke, George M. Crowson, Dr. Charles U. Culmer, Dr. Duane D. Darling, William Dess, Cecil Homer Ellis, Franklin Courtney Ellis, Robert S. Fiffer, Valentine Hechler, Becher W. Hungerford, C. N. Hurst, Lawrence Kutchins, O. C. Lance, Leland J. Mast, Temple McFayden, Paul K. McGaffigan, William W. Pelz, Dr. Robert Morse Potter, Dr. Louis Rampona, Mrs. Harper Richards, Miss Helen M. Sanford, Joseph B. Semrad, Marc A. Shantz, Harry L. Shlaes, Winfield Tice.

BY JEEP TO HONDURAS: A WOMAN BOTANIST'S EXPEDITION

Dr. Margery Carlson, Assistant Professor of Biology at Northwestern University, returned in April from a botanical expedition into the mountains and jungles of Central America, where she collected about 1,000 plants for addition to Chicago Natural History Museum's herbarium. She was accompanied by Miss Kate Staley, a former physiologist at the University of Wisconsin. It is believed that several new species will be described when the plants are studied and classified.

BY MARGERY CARLSON

JUST AHEAD of the first big snows of last December, Kate Staley and I started out for Honduras in our jeep station wagon, equipped for living and for collecting plants to be added to Chicago Natural History Museum's herbarium.

ZIGZAG ROAD TO FOSSIL SITE

Tortuous highway in Honduras on way to El Rosario mine where Dr. Margery Carlson of Northwesteen University hunted fossil plants for Chicago Natural History Museum.

We stopped first to revisit Montebello, a region of lakes and mountains on the Mexico-Guatemala border, about 35 miles from Comitán, Chiapas, where we had collected in April, 1949. The area is covered with a pine-oak-liquidambar forest and lies on the border of the great Chiapas rain forest. It has an especially luxuriant epiphytic vegetation—that is, plants growing on the branches of the trees. This time, in January, we hoped to find plants in bloom other than those we had found in April.

We had difficulty getting into the area because the road is merely a track among the trees and across the streams, which in January, as in all the year except in April and May, is very wet and muddy. In the worst places we had to cut branches to fill in over the mire, but with the four-wheel-drive we pulled through.

RANCH HEADQUARTERS

During our first visit to Montebello we camped in our truck on the shores of some of the lakes, but this time we were glad to accept an invitation to stay in the storeroom of a ranch, because the weather was very wet and chilly. Our room had ears of corn piled along one end, and bags of beans, rice, and salt along the other end, but we covered the center of the floor with pine needles, spread out our sleeping bags, and used a box as a table for our gasoline stove and cooking utensils. Every day, in rain and sun, we were out collecting, and at night, while Kate wrote up the day's activities, I put the plants in the presses to dry over our kerosene lanterns, which furnished us also with heat and light.

From Montebello we had to retrace our way to the railroad because the Pan-American highway to the Mexican border does not meet the highway in Guatemala. Shipping the car involves difficulties, chiefly in meeting the demands of railroad employees for satisfactorily generous tips.

Our goal was Honduras, so we crossed Guatemala and El Salvador with little delay. The highway in Guatemala is in very bad condition, except in the vicinity of Guatemala City, but the mountain scenery is so spectacular that one does not mind the poor road. The little country of El Salvador has good paved roads. It has made remarkable economic progress since we were there six years ago, on our first plant collecting trip—especially since the price of coffee went up! We lingered there only to visit the friends who had made our work possible in 1946.

Honduras is a conglomeration of mountain ranges of varying lengths and heights, with valleys scattered everywhere between, bordered by the low coastal plain. In the highlands, the people live in the valleys, which become ever more parched during the dry season—December to May—and then spring into lush green when the rains begin. The mountain slopes, to an altitude of about 5,000 feet above sea level, are covered with an open forest of *ocote* pines, in almost pure stands in many places. These forests, too, are dry in March, April, and May and are burned over by fires which escape when the fields below are burned to control weeds and ticks. The government is at last attempting to stop this practice, as it ruins the soil and prevents the growth of seedling pines but does little good in controlling weeds and ticks.

All of the mountains which extend higher than 5,000 feet are capped by an entirely different type of forest—the cloud forest. The trade winds hit these peaks and their moisture condenses into clouds which make possible these unique mountain jungles, the home of the quetzal bird. These dark, cool, dripping forests are a haven for the botanist during the dry season in the lower altitudes. Here he finds broad-leaf trees, principally oaks and avocados, vines, ferns, including several species of tree ferns, mosses, liverworts and algae. The trunks and branches of the trees are completely covered with epiphytic plants. Mosses grow on ferns, ferns on other ferns, and these on the trees. Many species of filmy ferns, which would dry up with a few minutes exposure to the sun, are found only in cloud forests such as these, and in tropical rain forests at lower elevations.

We were able to approach several of these cloud forests by road in our jeep, so that the climb to the peaks, after leaving the car, was only 2,000 to 4,000 feet.

Dr. Theodor Just, Chief Curator of Botany, also requested that I try to locate the beds of some plant fossils which had been collected in 1886 at a gold-silver mine. It was a major feat in driving to get the car down the road which literally plunges zigzag on the steep side of a canyon to the mine.

SEARCHING FOR FOSSIL PLANTS

Dr. Carlson and a boy from El Rosario mine hunt among the rocks for vestiges of the vegetation of millions of years ago on a ledge of a precipitous cliff near the gold-silver vein.

Some of the curves are so sharp that we had to back up before we could get around them and some of the grades are as much as 37 degrees. Fortunately, we did not meet any cars coming toward us—there are only

(*Continued on page 7, column 2*)

THE BIRD PAGE . . .

FEATHERED 'BABY SITTERS' AND CO-OP NURSERY-NESTS

By AUSTIN L. RAND
CURATOR OF BIRDS

Co-operative nurseries appear even in the bird world. In these, a few parents look after the young while the rest of the adults can go about their other affairs, freed of the care of their offspring. .

The wild turkey of our eastern United States commonly steals away singly to lay

BIRD NURSERIES
An example of co-operation in the animal world. Cartoon by Ruth Johnson

its eggs and incubate them in its nest on the ground. But occasionally it happens, Audubon writes, that several hen turkeys associate, lay their eggs in one nest, and raise their young together. With the turkey, apparently there is little division of labor. Audubon writes of finding three hens sitting on 42 eggs, but he says that one of the hens is always on the watch at the nest so that natural enemies have no chance to rob it.

A GREGARIOUS BIRD

What is of only occasional occurrence in one species may be the regular course of events in another. With the ani, we find it customary for a number of birds to nest together. The anis are moderate-sized cuckoos that live in the tropical Americas. The smooth-billed ani is perhaps the best known, as a result of research by Dr. D. E. Davis of Johns Hopkins University, who, when studying at Harvard for his doctor's degree, made a special trip to Cuba to study them in the field.

The smooth-billed ani goes in flocks the year round. Usually there are about seven birds in the flock, but there may be as many as twenty-four. The nest is a bulky structure of twigs and fresh leaves. When nest building starts, one bird is usually most active, but as many as five birds have been seen carrying in sticks at one time. When the nest of sticks and leaves is finished, several females may lay their eggs in it. But apparently only one bird incubates at a time, and the male takes his turn at incubating. When the young hatch, after about thirteen days, most of the adults in the colony help feed the young.

Eider ducks may nest in dense colonies, but each bird has its own nest in which it lays its own eggs and in which the female alone incubates. After the young hatch and the mother leads them to the water, the young may band into larger flocks, accompanied by a number of females, though each duckling seems to be independent of its particular parent and attaches itself to and is tended by the nearest duck.

PENGUIN SOCIAL GROUPS

A much more elaborate system for caring for the young has been evolved by the Adelie penguin. These birds make their nests in scoops in the soil, lining them with stones, and there they lay and incubate their two eggs. The sexes alternate in their care of the eggs and of the young in their early stages. But when the young are partly grown the family unit breaks up for a communistic type of social organization. The young are then grouped into bands of up to twenty or more birds and are left under the care of a few old birds while the rest of the adults go to the water, which may be some distance away. Periodically they return with food for the young. Apparently an individual "child" is not recognized by the parent, but the parent goes to the particular group of which its young make a part and there may feed any one of the "child group."

Here we have two definite cases of a social organization that has resulted in division of labor: in the incubation of the ani and in the care of young penguins. In addition we have in the conduct of the wild turkey and the eider duck two less specialized cases of the same thing, showing the sort of raw material on which evolution can operate to produce new behavior patterns.

A Curator's Adventure . . .

UNPACKING BIRD-SKINS FROM NEGROS ISLAND

A shipment of birds from the Philippines recently arrived at Chicago Natural History Museum. The receipt of a collection is always an important event in the Division of Birds as in any department of the Museum. With hammer and pinch bar the lids were pried off the cases, and the cartons and packages inside were eagerly opened. The Division of Insects was told that there was a tin box of beautiful big atlas moths. Monkey, pig, and rodent skins and skulls went to the Division of Mammals across the hall. Then we began to unwrap the paper cylinders in which the birds had been packed.

These are the moments of discovery. We have all spent long days in the field on expeditions, collecting our 10 or 15 or 20 birds a day. We know how much work goes into these collections and that only at rare intervals does one find new, rare, and interesting birds. There are stretches of barren days in between. Now, in the course of a half day, we experience all the thrills of a whole expedition. The results of months of collecting are wrapped in the paper cylinders in front of us. Every ten birds or so unwrapped represented a day of collecting in the jungle.

In our hurry to get this shipment unpacked, for after all it is only one of many shipments we receive, we have no time to identify and compare them all. That will come later, in working up a report on the collection. Now we are interested in getting the birds laid out in our trays and into our filing cases in the bird range where they will be safe and ready for study.

But we pause now and then to marvel at the beauty of the bewitching markings and variety of red and iridescent blues and purples of the many tiny sunbirds; to note the brilliant golden orioles or the black and yellow chickadee that recalls our local species but is strange, as though in masquerade dress; to comment on the prevalence of blue coloration in the many flycatchers of the Philippines. There is a greenish babbling thrush with orange tufts on its head, and we are pleased to see the strange red comb on the head of a water crake. But we are not fooled by all this brilliance into thinking that these forms are "new to science." We know it's unlikely that such conspicuous things should have escaped previous attention. The row of little olive-green birds, female sunbirds, flowerpeckers, white-eyes, and warblers probably contains more secrets yet unsolved than all the brilliance of the more bizzare forms. The green pigeons are striking, but does the series of dull brown doves represent two species, as is usually thought, or are they really three closely related ones? A nightjar may be a new record; a swift surely is. Several babblers are certainly at least new to our collection.

But these are things to be worked out later, after the collection is sorted and catalogued. Now we're interested in the fact that there are 433 specimens, that the avifauna seems well represented, and that the specimens are well prepared and labeled. The collection will add many species to our collections and provide welcome material for research. This shipment is part of a series of such shipments from Negros Island in the Philippines, where Dr. D. S. Rabor, of Silliman University, is making the collection while he is studying the fauna of the island.

A.L.R.

Observe always that everything is the result of change, and get used to thinking that there is nothing Nature loves so well as to change existing forms and to make new ones like them. —*Marcus Aurelius*

HOW AN ANCIENT EGYPTIAN SOUGHT TO ATTAIN AFTER-LIFE

This is the story of an ancient Egyptian papyrus on exhibition in Hall J. While not a new exhibit as are most of those described in the BULLETIN, *it is so old among the Museum's collections that it may have a fresh "newness" for many of our readers today. Many of the Museum's older exhibits are outstanding in interest, and as they were acquired years before the inception of the* BULLETIN *and have been reinstalled in more modern manner than when first received, they descrve occasional attention in these pages.*

The following is a layman's summary of some of the more interesting data in "The Papyrus of Ani," published by the British Museum, London.

By CHRISTINE TARDY

ANI HAD A GOOD JOB. He held the exalted official position of Chancellor of the Ecclesiastical Revenues and Endowments of Abydos and Thebes. As an official scribe in the flourishing city of Thebes on the banks of the Nile, which carried on considerable trade with neighboring Abydos down the river, Ani was well off indeed.

While he was still in the prime of life, Ani built his tomb, as was the custom in ancient Egypt, and proceeded to equip it with the little useful things he would need in the after-life. Ani wasn't preoccupied with death in an unhealthy way—all the people he knew devoted a good deal of time and thought to their funerals, their tombs, and the after-life, for after all, was not this mortal existence but a transition to be endured until one joined the immortals in the heavens? And was it not wise to take all the precautions one could afford to attain life beyond the grave?

One of the more important things Ani had to attend to was the making up of his "book of the dead," that would be placed in his tomb to ease his passage into the next world. Of course, when Ani died, his wife Thuthu could go out to the market place and buy one ready-made, but it did seem that the personal touch the scroll would receive under his supervision might make things easier for him in the after-life. Being a wealthy citizen, Ani purchased a large quantity of papyrus reed which was sliced very thin. The slices were attached side by side until the needed length was reached. Ani could afford it, so he had his papyrus scroll made three-ply instead of the ordinary two-ply, and it stretched out to a full 78 feet in length.

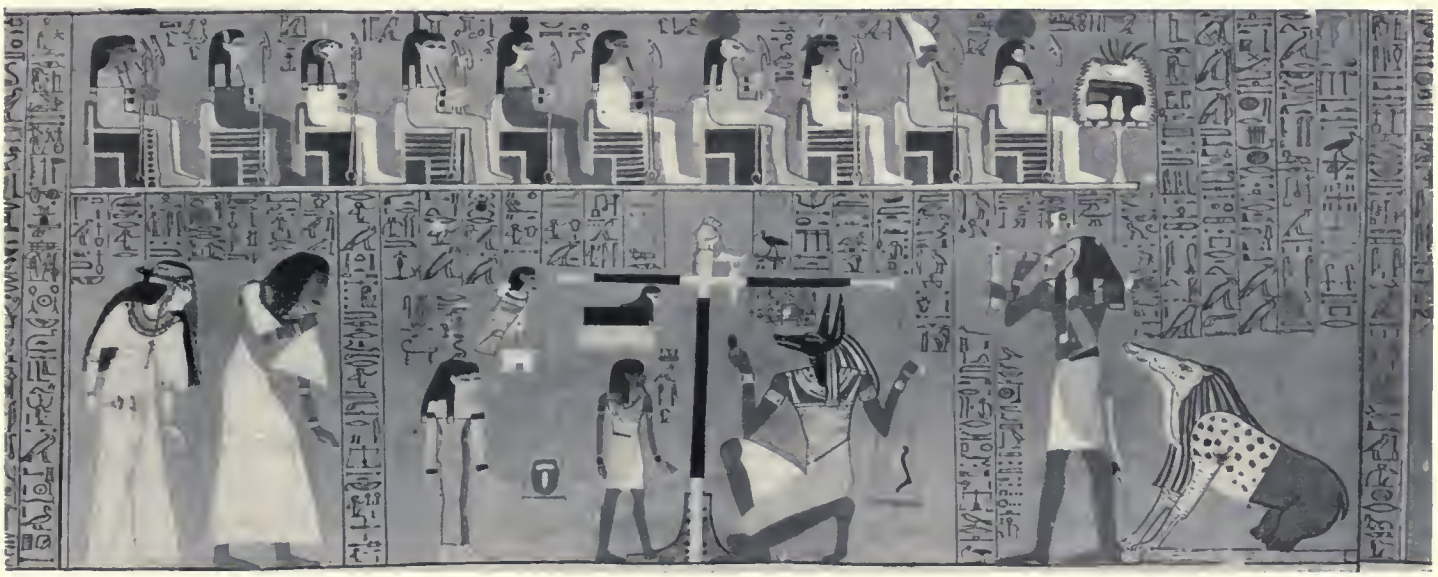
PICTURES WERE PRECAUTIONARY

Next Ani hired an artist to paint the customary stylized figures of himself, his wife, and the gods, and to depict some of the adventures he knew he would experience on his way to immortality. One could not be too careful about making things clear—if the controlling spirits couldn't read, they would understand the pictures. And they would be pleased if the pictures were attractive and well-colored.

After the pictures were painted on the scroll, Ani called in a scribe (or to save money he may have done the writing himself) to fill in the necessary prayers, spells and hymns. The scribe went to work with his brush-like pens and black and red inks, making careful hieroglyphic symbols on the papyrus. He covered about half the scroll with detailed and personalized accounts of Ani's merits, making it quite plain that Ani had devoted the best part of his life to serving the gods with righteous acts. But something happened when they got around to the second half of the scroll. Perhaps the scribe incurred his master's displeasure, or perhaps Ani ran short of funds. At any rate, the rest of the scroll was taken from stock papyrus with ready-made hieroglyphics—standardized forms with blanks for the deceased's name to be filled in. We know this now because Ani's name didn't fit in the spaces very well.

Ani lived and died in Thebes sometime during the second half of the 18th dynasty—1500 to 1400 B.C. If his funeral came off as it was pictured in his personal "book of the dead," which was placed next to his body, it was appropriate to his high station in the Egyptian life of the time, and was quite an elaborate affair. Ani had visualized it thus: on the way to the tomb from the city, Ani's mummy lay in a chest or shrine mounted on a boat-on-runners, which was drawn by oxen. Thuthu, his widow, kneeled by the side, lamenting. A priest wearing a panther's skin burned incense in a censer and poured out a libation from a vase. Eight mourners followed, one with whitened hair. Behind them came a sepulchral ark or chest ornamented with emblems of "protection" and "stability," drawn on a sledge by four attendants and followed by two others. By their side walked more attendants carrying Ani's palette, boxes, chair, couch, staff, and other things he would need for his comfort and convenience in the after-life.

When the procession arrived at the tomb, groups of wailing women stood around with attendants who carried boxes of flowers,



A SECTION OF THE FAMOUS PAPYRUS OF ANI

In the lower-left vignette, Ani is just beginning his passage into the after-life. Followed by the spirit of his wife, Thuthu, who carries a sistrum to offer to the gods, both are garbed in fringed white and saffron colored linen, and are wearing wigs, necklaces, and bracelets, according to the custom of the ancient Egyptians. The center panel shows Ani before the god of the dead, Anubis, who weighs Ani's heart, the emblem of conscience, against a feather, the emblem of law. Found righteous, Ani proceeds to a series of encounters with other deities and gods, some of whom have the heads or bodies of various animals.

and vases of unguents on yokes over their shoulders. There were also a cow and a calf and painted wooden chairs. An attendant with shaved head carried in a newly-cut haunch of meat for the funeral feast. With Ani's mummy placed standing at the door of the tomb, last rites were administered, while Thuthu kneeled in front for one last farewell. There were priests standing all around. One had an instrument for performing a ceremony known as "opening the mouth," which would restore to the mummy the functions of a living person, so he could talk and eat. Another read the service of the dead from a papyrus.

Many "books of the dead" stated quite flatly that the deceased was deserving of admission to the company of the gods. For example, this Museum has on exhibition the original manuscript of Isty, an Egyptian housemistress and chantress who lived about 1000 B.C. In her scroll, only eight feet long, she had to be brief and declare her worthiness by stating all the sins she had *not* committed. But Ani could afford subtlety. There are many, many pictures that show him posing modestly, with hands raised in devotion and pious adoration, before a table heaped high with offerings of haunches of beef, bread and cakes, vases of wine and oil, fruits, lotus and other flowers.

In Ani's time, the fact that life in the hereafter was facilitated for those who could buy a document—and even better, could personalize it—indicates a shift of emphasis from righteous character to worldly wealth. This changing emphasis shows up in a comparative study of older and newer "book of the dead" documents. The oldest go back as far as 4500 B.C., and the custom of placing these documents in graves to help the deceased get through to heaven and the gods with a minimum of trouble, continued through to the early centuries of the Christian era.

ANI'S JUDGMENT DAY

After Ani has pictorially buried himself, he goes on to show what he expects to encounter before he achieves the glorious after-life. First he is judged—his heart (or conscience) is weighed against law, symbolized by a feather. Found righteous, he goes through innumerable gateways and passages of the other world, each guarded by gods and deities with the heads of animals. On all his long journey, he is constantly pleading his case with prayers, spells, offerings, denials of sins, and flattery to the gods.

Although Ani's document contains less than half of the chapters commonly assigned to the Theban version of the "book of the dead," it is assumed that he picked out chapters which would suffice for his spiritual welfare in the future life. Therefore, Egyptologists regard it as typical of the funeral book in vogue among Theban nobles of Ani's time. It is also the largest, most perfect, best preserved and best illuminated of all those dating from that dynasty. The original is in the British Museum, but an exact duplication can be seen in Hall J of this Museum. The replica is a gift to the Museum from the late Edward E. Ayer, one of the institution's first Trustees (1893–1927) and its first President (1894–98).

FOSSIL LOCALITIES OLD AND NEW

By EUGENE S. RICHARDSON, Jr.
CURATOR OF FOSSIL INVERTEBRATES

WITH THE COMING of spring weather, when robins, earthworms, skunks, and such little wild creatures scurry about and begin to take a new interest in life, the paleontologists likewise look up from their winter overlay of books and microscopes. "So pricketh hem nature in hir corages," quoth Chaucer, our favorite spring poet; "Than longen folk to goon on pilgrimages."

And away on various "pilgrimages" go the collectors of fossils. Highway construction crews stumble over them, quarry managers shoo them away from their blasting, coal miners find them a mile under the ground; they peer into gullies, chip pieces off of rock ledges, dig in fields and gravel pits, and return to their collections with new treasures from the distant past. Some of these treasures seep into the Museum during the rest of the year, as their proprietors bring them here to be identified (or sometimes just to be admired). We are grateful to those who allow us to look at their fossils, for often we can add a new occurrence to our records.

But an active and growing collection requires additions of its own, beyond the occasional glimpse of what someone else has collected, and so it is that the "fossil hounds" of the Museum staff also go forth to gather new specimens.

There are two kinds of localities that we can work on: the old ones and the new ones. Old localities are those where fossils have been collected before, and new localities are those where we hope to find some. For the benefit of the Museum collection, staff members are planning to visit some of each during the field season of 1952. For the twenty-second consecutive year, George Langford, Curator of Fossil Plants, will make several visits to the spoil heaps of the open coal mines in the vicinity of Wilmington and Braidwood, Illinois. That qualifies as an old locality. The writer, on the other hand, will visit a new locality near Mecca, Indiana, where interesting fossil fragments were discovered only last year by Dr. Rainer Zangerl, Curator of Fossil Reptiles.

SEEK NEW SPECIES

We collect in new localities in order to find new species that should be made known to science, or in order to gain more information on the past distribution of known species, or in order to improve the representation of ancient faunas in the collection. "But why," one might ask, "do you keep going back to the old localities? Surely, you already have all the fossils you need from those places."

No. There are some old localities that aren't worth revisiting for our collection because no species other than those we already have from them has been found there for many years. These we may call "used-up localities," and we might go back to them again to get additional specimens for exchanging with other museums, but not for our own collection. There are other old collecting grounds where we couldn't collect if we wanted to, such as the famous crinoid beds at Crawfordsville, Indiana, or the quarry near Milwaukee that once yielded quantities of fossil fishes. The first is inaccessible because the surface exposures have yielded almost all of their fossils and the rest lie under a forbidding weight of rock and soil; the second, thanks to a legitimate but discouraging operation in land reclamation, is now the bed of a river. These we may call "extinct localities."

But the area near Braidwood and Wilmington, though old, is neither used up nor extinct. No matter how often a locality has been visited, if it still yields fossils that were not in the collection previously, it remains a productive locality, and one that should be periodically re-examined with the object of collecting representatives of all the species present. As in most human endeavor, there is a point of diminishing returns in fossil collecting; it is reached later in some localities than in others.

REASONS FOR RETURN VISITS

A question that may be asked in regard to these places is: "Why don't you take one trip and spend several months all at once instead of doing it in pieces, a few days at a time?" A single long visit might indeed be the answer to collecting in some areas, but conditions differ from place to place. The plant-bearing clay near Puryear, Tennessee, has already been visited a half a dozen times by Mr. Langford, with the writer or Dr. R. H. Whitfield, Research Associate in Fossil Plants, accompanying him, and it is still productive even though strenuously explored on each visit. This is because the clay is being actively quarried for brick-making, and new beds are continually exposed.

The old spoil heaps of the Wilmington-Braidwood coal mines are still productive, even though the miners have long since moved to greener (blacker, that is) fields; for rain, frost, and thaw continually free new specimens from the hard clay of the heaps. Digging in this clay with hand shovels or picks is a forbidding task. In terms of fossils recovered per unit of labor and expense, it is sounder practice to let the weather do the work and to return

many times to pick up the specimens freed by natural means.

Whether a locality is old or new, close to civilization or far, it is well for the collector, amateur or professional, to take advice from the hunter and camper: don't go alone. Not only will two people be able to find and bring home somewhat more than twice as much "bacon" as one, but each will be ready to help the other in case of a fall or a flat tire.

DAILY GUIDE-LECTURES

Free guide-lecture tours are offered at 2 P.M. daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

STAFF NOTES

Dr. Alexander Spoehr, Curator of Oceanic Ethnology, has been awarded a Guggenheim Foundation fellowship for comparative studies in Micronesian anthropology. Under this fellowship, Dr. Spoehr will continue his field research in the islands of the South Pacific, where he has conducted two Museum expeditions since the war, one to the Marshall Islands and the second to the Marianas .... Recently Dr. Spoehr attended a conference of anthropologists and historians to discuss Indian studies. The meeting was held by the Ayer Collection Division of Chicago's Newberry Library .... **Dr. John B. Rinaldo,** Assistant Curator of Archaeology, participated, as a representative of the Museum, in the March 27 performance of "Pace of Chicago," television program presented by Marshall Field and Company over station WBKB.

D. Dwight Davis, Curator of Vertebrate Anatomy, **Loren P. Woods,** Curator of Fishes, **Clifford H. Pope,** Curator of Amphibians and Reptiles, and **Robert F. Inger,** Assistant Curator of Fishes, were representatives of the Museum at the meetings of the American Society of Ichthyologists and Herpetologists held April 17–21 in Austin, Texas.

Miss Nancy Worsham has been appointed a guide-lecturer on the staff of the Raymond Foundation, to fill the vacancy occasioned by the recent resignation of **Mrs. Lorain Stephens.** Miss Worsham specialized in biology at the University of Illinois in both undergraduate and graduate studies, with emphasis on ecology. For two years she was employed in the game management division and public information and education division of the Department of Conservation, State of Illinois.

TILLANDSIA IS ONE OF THE SHOWIEST AIR PLANTS

By EMIL SELLA
CURATOR OF EXHIBITS, BOTANY

The newest exhibits in Martin A. and Carrie Ryerson Hall (Plant Life—Hall 29) represent two specimens of bromeliads. The flowering air plant (*Tillandsia fasciculata*), the more striking of the two, is shown as it is often found, clinging to and growing on branches of trees. The other is the well-known and characteristic Spanish moss (*Tillandsia usneoides*) of the South.

Because the delicious pineapple fruit, belonging to the genus Ananas, is the most familiar member of the Bromeliaceae, this group of plants is commonly known as the pineapple family. Unlike the pineapple which is strictly terrestrial and owes its present world distribution primarily to the efforts of man, the seeds of Tillandsias with their long appendages consisting of soft hairs are carried or blown by wind, often landing on trees where they become established and grow. Although some species grow on the ground, most are epiphytic (air plants). Approximately 300 species of this genus are native to tropical and subtropical America.

Several species of Tillandsia are very showy when in bloom. Their long central spikes bear flowers ranging in color from red or purplish blue to yellow or white. While some species are large and stiffly erect, others are drooping or hanging. Tillandsias are grown in greenhouses both for flowers and foliage, and are usually propagated by suckers or sprouts from the base of the plants.

This exhibit is the first to be completed from the material collected in Florida during a botanical field trip in the early part of last year. While living plants collected on such trips are always used in the preparation of models, these specimens are rarely in bloom at the time the models are being made. In the case of the flowering air plant, a specimen nearly ready to bloom was obtained from Mulford B. Foster's garden in Orlando and supplemented by material collected in the southern part of the state. Fortunately, the specimen from Mr. Foster's garden came into full bloom at the time the model was being made, an exceptionally fine opportunity.

FLOWERING AIR PLANT

Model of Tillandsia fasciculata, a member of the pineapple family, now on exhibition in the Hall of Plant Life (Hall 29).

The model shown was prepared by the writer aided by Preparator Frank Boryca. The Spanish moss is a restoration of the actual specimen.

BY JEEP TO HONDURAS—

(*Continued from page 3*)

a few places where the road is wide enough to pass.

After talking with several officials at the mine, who knew nothing about the famous fossils, we talked by radio to a geologist at another of the company mines. He knew where they were and tried to direct us to the place, but we were not able to find them in the time at our disposal. We hope that he will collect them and send them to the Museum. We managed to collect some fossils in other localities, however, and these are now at the Museum.

Our 5,000-mile trip finally terminated, without mishap, at the Escuela Agrícola Panamericana, the United Fruit Company's agricultural school, where we visited Dr. Paul C. Standley, Curator Emeritus of the Herbarium at Chicago Natural History Museum.

Visiting Hours Change May 1

Beginning May 1, summer visiting hours, 9 A.M. to 6 P.M., will go into effect, continuing until September 1 (Labor Day).

EXPEDITION TO ALEUTIANS OBTAINS SEA OTTERS

The Aleutian Zoological Expedition returned recently with three sea otters which will be prepared for a habitat group in the Hall of Marine Mammals (Hall N).

The Fish and Wildlife Service, under whose protection the sea otters are slowly increasing, gave a permit to prepare scientific specimens. The Alaska Command granted permission to the Museum's Curator of Mammals, Colin C. Sanborn, to visit the area. The director and staff of the Arctic Health Research Center in Anchorage, Alaska, were most hospitable, acting as hosts to Mr. Sanborn during his stay in Anchorage, providing use of their laboratories, and arranging for transportation to the Aleutians. Robert D. Jones, Jr., and his assistant, David Hooper, of the Fish and Wildlife Service, were hosts and guides to the expedition while it was working on Amchitka Island.

A parasitic disease has been the cause of some sea otter deaths in recent years and this is receiving special attention. Dr. Robert Rausch, chief of the Animal-Borne Disease Section of the Arctic Health Research Center, accompanied the expedition to Amchitka to continue this study.

Fewer dead animals were found this year than last, and from these the expedition secured two for skeletons. It also prepared a male, female, and one pup for the habitat group. The adults are a little over four feet long and weigh from fifty to seventy-five pounds.

The work was done under difficult weather conditions, only one day in twelve being sunny and moderately calm. On most days there was a strong wind with snow or snow squalls, and one period of 120-mile-per-hour wind was experienced.

FOUNDATIONS AID STUDIES IN EARLY AGRICULTURE

To aid the continuation of his extensive research project on early agriculture of the Indians in North America, Dr. Hugh C. Cutler, Curator of Economic Botany, has received grants from both the Guggenheim and the Wenner-Gren foundations.

In the work thus far carried on, Dr. Cutler has been able to demonstrate that farmers lived in what is now the United States at least as far back as 4,500 years ago, or much earlier than any of the previous studies had indicated. More important, he has found that these ancient farmers practiced plant breeding to develop better varieties of corn, just as modern farmers do, indicating that agriculture originated a long time before the date thus far traced. Although Egyptian and Sumerian cultures, based on agriculture, were flourishing that early, most of the Old World was sparsely peopled with nomadic hunters.

Dr. Cutler's investigations are based on approximately 38,000 nearly intact cobs of corn excavated at Tularosa Cave in New Mexico by the Museum's Southwest Archaeological Expeditions led by Dr. Paul S. Martin, Chief Curator of Anthropology. Dr. Cutler participated as botanist during one season. Prior to the discovery of the Tularosa corn, little was known about the beginnings of civilization in North America, says Dr. Cutler.

"People have to discover agriculture before they can settle down in one place and develop refinements of life," Dr. Cutler adds. "Since civilization is always based on agriculture, the development of a culture cannot be properly traced until the history of its agriculture is known."

As his researches progress further, Dr. Cutler will report additional developments in future issues of the BULLETIN, and will also publish a detailed technical report in the Museum's scientific series.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From the *Annual Report of the Director* for the year 1902:

"*Installation, Rearrangement and Permanent Improvements.*—The installation of Hall 24, containing the protozoa, sponges and coral collections, has been almost completed. The specimens have been placed in new cases specially built for their display to advantage, not only showing the specimens in the best possible way, but effecting a great economy of space, the collection, as a matter of fact, now occupying about one-half the space it formerly did."

An exhibit of lower invertebrates in 1902

ARTISTS OF TOMORROW IN MUSEUM EXHIBIT

Tomorrow's artists—children and older students of the Junior School of the Art Institute of Chicago—whose studies on nature in art and design are made partly in classes conducted at Chicago Natural History Museum will display their creations in a special exhibit to be held in Stanley Field Hall May 1 to 31.

More than 50 pastel drawings, watercolors, and oil paintings will be shown; there is also a block print on silk, and a brush-and-ink sketch. The work to be shown, judged the best of the year's total production of the classes, was selected by two members of this Museum's staff, Gustaf Dalstrom, Artist in the Department of Anthropology, and Douglas E. Tibbitts, Staff Illustrator. The Museum artists were assisted in judging by Mrs. C. S. Howlett, head of the Art Education Department of the Art Institute.

The majority of the pictures are marked by a realistic approach. Especially prominent in the exhibit are drawings inspired by the new series of habitat groups restoring various fossil invertebrates of hundreds of millions of years ago, in the recently reinstalled and reopened Frederick J. V. Skiff Hall (Hall 37).

The classes, which meet in this Museum on regular schedules, include two groups of students, one ranging from 9 to 18 years of age and one composed of those 18 and over.

GIFTS TO THE MUSEUM

Following is a list of the principal gifts received during the past month:

Department of Botany:

From E. P. Killip, Summerland Key Post Office, Fla.—100 algae, Cuba and Florida; Oliver Norvell, Stanford, Calif.—13 *Cucurbit* fruits and seeds, Mexico, Guatemala, El Salvador, New Mexico; David Troxel, Barrington, Ill.—35 phanerogams, Illinois; Robert Van Tress, Chicago—an *Aglaonema modestum.*

Department of Geology:

From: Dillwyn W. Paxson, Fort Smith, Ark.—a fossil palm stem.

Department of Zoology:

From: Dr. Sidney J. Camras, Chicago—200 North American butterflies, United States; Chicago Zoological Society, Brookfield, Ill.—a penguin; Dr. I. McT. Cowan, Vancouver, Canada—a bird skin, Vancouver; Lawrence L. Curtis and James W. Cronin, Dallas, Tex.—two salamanders, Texas; General Biological Supply House, Chicago—3 lizards and earthworms and crabs, East Africa; Harold W. Harry, Columbia, Mo.—a collection of land, freshwater and marine shells, worldwide; Harry Hoogstraal, Cairo, Egypt—600 mammals, Egypt; Lt. Col. Robert Traub, Washington, D.C.—21 insects, North America, South America and Malay Peninsula.

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Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

SUNDAYS WITH DALLWIG INCREASE IN POPULARITY

THE SUNDAY afternoon "Layman Lectures" of Paul G. Dallwig, the Chicago businessman who has given his time to conduct this popular series for twelve seasons, exceeded in 1951–52 the successes of all previous years. For his service in presenting these lectures the Museum thanks Mr. Dallwig for a noteworthy contribution to its program of adult education. We are sure, too, that the thousands of people who have attended his presentations feel that they likewise owe him recognition for work well done.

Paul G. Dallwig

There were over 15,000 requests for reservations, which is 6,000 more than last season. Even though arrangements were made to permit increasing the size of audiences about 20 per cent to the maximum practicable to handle, it was possible to accommodate only 4,229 of the applicants. This figure is, nevertheless, a new record and compares with 3,466 in the preceding season. The reason for strict limits on audience-sizes is that Mr. Dallwig presents demonstrations in the exhibition halls as well as talks from the rostrum in the lecture room. Average attendance per Sunday was 186 this season as compared to 148 last year, and on eight Sundays attendance exceeded 200, with over 300 on one Sunday.

The most popular lectures this season were "Money Does Grow on Trees" and "Life—What Is It?" For each of these lectures about 3,500 requests for reservations were received. "Out of This World—For One Afternoon," "Gems, Jewels, and 'Junk,'" and "Living Races and Their Way of Life" were the other subjects during the five months. This season Museum Members could attend the lectures without advance reservations upon presentation of their membership cards. This resulted in an unusually large membership response, and many Members became acquainted with the popular Dallwig lectures for the first time.

Mr. Dallwig will return to the Museum for a new series of lectures to begin the first Sunday in November. Those on the waiting list whose requests for reservations could not be filled this past season will be offered accommodations next season. Requests for reservations may be filed at the Museum throughout the months before the next season begins.

STAFF NOTES

Homer V. Holdren has been appointed Assistant in the Division of Photography, where he will work with John Bayalis, Photographer. Mr. Holdren was associated with the McCray Studio for twelve years .... **Miss Dolla Cox,** a graduate of Barnard College (Columbia University), has been appointed secretary of the Department of Botany .... **Karl P. Schmidt,** Chief Curator of Zoology, gave the annual John Wesley Powell Lecture before a meeting of the Western Division of the American Association for the Advancement of Science on May 1 at the University of Colorado. Chief Curator Schmidt was recently elected a fellow by the California Academy of Sciences .... **Dr. Julian A. Steyermark,** Curator of the Herbarium, recently conducted a field trip to the Missouri Ozarks.

Annual Report Published

The Annual Report of Colonel Clifford C. Gregg, Director, to the Board of Trustees of Chicago Natural History Museum has just been published by the Museum Press. The Report, a book of 139 pages and 23 illustrations, summarizes the activities of the institution for 1951. Copies will be distributed to all Members of the Museum at an early date.

THIS MONTH'S COVER

Our June bride is a Menangkabau woman of central Sumatra. Her gown and ornaments are family heirlooms, passed on to generations of brides. The gown itself is silk woven with gold and silver thread, and on her wrists the bride wears huge gold-plated bracelets with intricately worked designs. Wearing a gold fingernail protector on her little finger is an old Chinese custom taken over by the Malays. The wedding festivities last eight days, beginning with a recital of parts of the Koran before the local religious leader and culminating in feasting and dancing on the last day. Photograph is of a life-size figure displayed, with the bridegroom, in Hall G of the Museum. An article on wedding customs around the world appears on page 5.

Curator Pope to Resume Field Work in Mexico

Clifford H. Pope, Curator of Amphibians and Reptiles, who will continue the work on Mexican salamanders that was begun last year, plans to leave for the field about the middle of June and return in early September. During July and August of 1951 he studied the ecology and distribution of species of the Mexican highlands chiefly in the region of Mexico City, which lies near the highlands' southern edge. This year he will work on the eastern edge of the highlands from the vicinity of Orizaba northward, where the salamander fauna is still richer and prospects for interesting discoveries are great.

NEW MEMBERS

The following persons became Museum Members from April 16 to May 15:

Associate Members

Gerhard Lessman, M. W. Welch

Annual Members

William A. Armstrong, C. E. Backman, Miss Elsa C. Beck, Frederick Beck, Richard William Brown, W. T. Chester, Benjamin B. Davis, Matthew L. Devine, Robert Diller, Mrs. G. Corson Ellis, Richard H. Grimm, Edward J. Haedike, H. H. Hasselbacher, William G. Hauser, Samuel C. Horwitz, Mrs. S. L. Ingersoll, Bert Johnson, R. S. Marek, John W. McElroy, Frank Billings Nichols, M. Hudson Rathburn, Edward C. Riley, T. A. Siniarski, A. M. Thompson

The proper study of mankind is man.

—ALEXANDER POPE

LAPIDARISTS TO EXHIBIT GEM CREATIONS

UNLESS you're a lapidarist, you've probably only half-enjoyed your jewelry. This month's special exhibit at the Museum shows what happens when people discover the pleasure that can come from creating gems and jewelry, watching them take form and beauty under careful eyes and hands. The satisfaction in such a hobby is demonstrated by the way amateur lapidary clubs are springing up everywhere and by the way people respond to lapidary exhibits.

For as long as anyone knows, human beings have liked to adorn and decorate themselves. Some of our ancestors went in for the permanent kind of self-décor—tattooing—just as some South Sea Islanders and a few of our own people, chiefly sailors, do today. But with the exception of certain physiological methods of beautifying, such as plastic surgery, eyebrow-plucking, hair-dyeing, and so forth, modern adornment is limited more to nonpermanent and changeable decorations, such as clothing and jewelry.

In Stanley Field Hall, June 1 through June 30, the Museum will display gems and jewelry made by Chicago and suburban craftsmen. This Second Annual Amateur Handcrafted Gem and Jewelry Competitive Exhibition will display the prize-winning creations entered in Chicago Lapidary Club's contest. The contributing lapidarists are from all walks of life. Some of them practice their avocations independently, others through lapidary clubs or in workshops conducted in five field houses of the Chicago Park District. These "rock hounds" work primarily with semiprecious stones, either cutting and polishing them to remain as cabochons without settings, mounting the polished gems in silver, gold, or other metals to make jewelry, or carving designs into the stones for everything from earrings to bookends.

This year's contestants were classified into two groups: novices, who have been "rock hounds" less than two years, and advanced lapidarists, who have been practicing the craft more than two years. The contest and exhibits include eight divisions in each classification: (1) individual gems (cut stones without settings, single entries); (2) specific gem collections (all one kind of stone); (3) general gem collections (different kinds of stones); (4) individual jewelry pieces (single entries); (5) jewelry sets (matching pieces made to be worn together); (6) jewelry collections; (7) polished slab collections; and (8) individual pieces (sculptured bookends, etc.).

Because of this broad range, the ribbons, gold cups, and other trophies awarded reached a total of 68. The prize-winning entries, selected from 228 entries, comprise hundreds and hundreds of individual specimens because of the multiple collections. For example, one entry is a general gem collection that includes 375 cabochons cut from 160 different semiprecious stones. Another entry in the specific gem collection group consists of 300 Australian opals ranging from 3 to 125 carats each. Total value of the show's exhibits is estimated at about a quarter of a million dollars. In addition to the cups and ribbons, advanced division contestants competed for an ancient and rare cup made of green-flecked off-white Burmese jade.

Chairman of the Exhibition Committee this year is Joseph C. Arey, an engineer for the Sanitary District of Chicago when he's not working on gems. When the exhibit leaves the Museum, it will go on display in Marshall Field and Company's jewelry department for three weeks starting July 7. Last year's first exhibit of this work in the Museum was such an outstanding success that Chicago Lapidary Club decided to make the contest and exhibit an annual event.

18th SOUTHWEST EXPEDITION IS UNDER WAY

RESERVE, New Mexico has about 150 people, a general store, and a post office. The nearest town is over 100 miles away. There just isn't much excitement in the little Spanish-American hamlet most of the time. But along about May or June things begin to perk up, for then the annual Southwest Archaeological Expedition from Chicago Natural History Museum is due to arrive to spend the summer just ten miles away. This year's activity got under way with the departure on May 17 of Dr. Paul S. Martin, Chief Curator of Anthropology.

It's always a big event for the citizens of Reserve and a big event for the Museum. During the years that the archaeologists have been digging in the area they have become a part of the community four months out of the year. They take part in all the things of importance to the tiny village—lending neighborly assistance—and

(*Continued on page 4*)

SAFARI IN AFRICA WILL SEEK BIRDS FOR MUSEUM

AN IMPORTANT zoological expedition to East Africa, sponsored and led personally by Walther Buchen, of Winnetka, Illinois, entered the field last month to collect birds and a number of mammals. Mr. and Mrs. Buchen left Chicago by air on May 9 for Nairobi in Kenya Colony, going by way of London. In Kenya they plan to complete organization of a safari to proceed to the upper Nile region in Uganda.

Mrs. Walther Buchen

The expedition, planned in consultation with Dr. Austin L. Rand, Curator of Birds, is an addition to the schedule of twenty-two expeditions and field trips officially announced at the beginning of the year (BULLETIN, January, 1952) and promises to be one of the Museum's most productive current ventures afield. In Nairobi, according to the plan, the Buchens will engage a British ornithologist as scientific aide, arrange for a motor truck, and organize their safari. About twenty native guides, porters, and other helpers will join the safari as it proceeds to the upper Nile region. After going to the limit of terrain passable by truck, the safari will penetrate areas accessible only on foot.

The principal object of the expedition is to collect material for a new habitat group in Hall 20 that will reproduce a papyrus marsh with its teeming bird inhabitants, a typical scene of the Upper Nile Valley. It is expected that from three to four months will be required to collect the wide variety of birds needed for this ecological group, which will be dominated by a large grotesque bird known as the whaleheaded stork. Among the dozens of other birds to be sought for the Upper Nile group are cormorants, pelicans, water hens, herons, plovers, and ducks of many kinds. Photographs and color sketches will be made on the spot for the guidance of Museum artists and technicians who later will reproduce this "piece" of Africa as a setting for the birds.

Walther Buchen

In addition to material for exhibition purposes, Mr. and Mrs. Buchen's expedition will seek a wide representation of birds and mammals that are desired for the Museum's research collections. Mr. Buchen is already listed on the Museum's roll of Contributors in recognition of his past notable gifts to the Department of Zoology of specimens collected by him on two previous expeditions in Africa. These gifts to the Museum include several hundred birds from Mount Kenya and from areas about 200 miles to the south in both Kenya Colony and Uganda. Mr. Buchen is president of the Buchen Company, Chicago advertising agency. A number of years ago, before entering advertising, he was a member of the faculty of the University of Illinois.

SOUTHWEST EXPEDITION—

(*Continued from page 3*)

the village takes part in the work of the expedition. Each year at least five residents of Reserve are hired to help with the digging, and all the others have become enough acquainted with the scientists' work to hunt around for likely places that might become new sites. When Dr. Martin, leader of the expedition, gives lectures in the high school, folks come from 90 miles around to hear him speak.

MODES OF LIFE TRACED

Partly through the aid resulting from this type of close-knit co-operation and community interest, the sites investigated in this mountainous area of New Mexico have yielded particularly rich results. More and more questions are answered each year, as new evidence is unearthed to tell the story of the ancient civilizations that lived in the region. In the past two years the work has uncovered the oldest corn (4,500 years old) ever discovered. Studies of this corn together with other foods and artifacts make it possible to begin to get a picture of how these ancient Indians lived throughout the centuries. This, of course, throws light on the whole history of Indian civilization and human development.

Starting in February each year, Dr. Martin begins to line up his crew and the equipment needed for the coming summer's expedition. This year Dr. John B. Rinaldo, Assistant Curator of Archaeology, and Miss Elaine Bluhm, Assistant in Archaeology, will be joined by Robert Adams and Thomas Alder, anthropology students, and Miss Marjory Kelly, research archaeologist. The expedition's cook, Mrs. Martha Perry, will set up camp early in June. When the whole crew has arrived, they'll engage five workers from Reserve.

Dr. Martin and his crew have built a shack near Reserve and this, supplemented with a couple of tents, is where the archaeologists will spend the cold, cold nights. Six days a week the crew is out working where it's usually at least 100 degrees in the shade. But after sunset, the temperature begins to drop—and fast! In a 24-hour period, the mercury changes 60 to 70 degrees. During supper you put on a sweater. At dessert, you put on another. Then you keep adding more clothing until it's time to go to bed, when it's so cold you crawl into a sleeping bag clothed as if on an arctic expedition.

THE WORK IS RUGGED

When you wake up in the morning, you put on blue jeans and a T-shirt, toss a straw hat on your head, and pull on a pair of heavy army boots. You need thick soles on the rocky terrain, and it's a good idea to have thick leather protection around your feet because the area is infested with rattlesnakes, scorpions, and tarantulas. You pick up a pair of goggles and a respirator mask and a high-power battery light, and you're ready to walk to the site and start digging.

The camp itself is 6,200 feet above sea level in a mountain pine-forest. Craggy peaks tower up another 2,000 feet all around. There are two sites being worked, a cave and a kiva (underground ceremonial chamber). The cave site borders on the edge of the forest near an ancient lake bed, hidden on the side of a boulder-strewn mountain about 400 feet above a road. This is a new cave being explored because others near it yielded so much remarkably preserved material, protected for centuries in the extreme dryness. The slightest movement in these caves stirs up fog-like clouds of dust so thick that the crew looks at the end of each day as though it had been working a coal mine. The dust is the reason for the goggles and masks and heavy-duty lights. Unfortunately, water for the essential daily baths has to be hauled from a well half a mile away.

The kiva site is twenty miles from the cave site. This undergound ceremonial chamber is the only kiva of a certain unique shape and size in the area. Digging, which started there last year, looked hopeful, although it wasn't possible to go deep enough to yield much then. It is thought that a study of this kiva may indicate certain cultural ties with regions farther away.

TOIL AT NIGHT

After a day's work at the sites, the crew returns to camp to clean up and eat dinner. The day's work is by no means over, however. Evenings and Sundays are spent identifying and cataloguing the specimens dug up during the day in order to get some of the rough work done before the material is shipped back to the Museum. For this, one of the essentials of equipment is an extensive reference library.

The camp is quite isolated, and Reserve's single general store couldn't adequately supply its provisions. Food is brought in from a town 100 miles away by truck. Meat arrives every two weeks to be stored in Reserve's refrigerator locker, and staples come once a month. Everyone on the expedition pitches in with his share of the work. The main work is digging, but in addition to certain specialized types of work above and beyond the digging, everyone has to be ready and willing to perform any task that needs doing.

At the end of September, camp is closed and the crew returns to the Museum to spend the rest of the year studying the evidence turned up during the summer and to prepare for the following summer's work. This year marks the eighteenth season of the Southwest Archaeological Expedition.

—C.T.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From the *Annual Report of the Director* for the year 1902:

"*Income and Maintenance.*—While the repairs and physical maintenance of the building [Field Columbian Museum in Jackson Park] by the exercise of the greatest economy cost $2,000 less than the provision of the budget for these items, this should not be accepted as an indication that the building is requiring less attention. The fact is, on the contrary, that the structure has about reached the limits of repair, using

Virginia Deer in Summer. This is one of the "Four Seasons" groups. Prepared 50 years ago by Carl E. Akeley, this exhibit now may be seen in Richard T. Crane, Jr., Hall (American Mammals).

that word in its literal sense. That is to say, any further expenditure in what might be called the maintenance of the building would be in the line of new construction. This is especially true of the exterior of the building, which, in spite of the most persistent and ingenious efforts to conceal the real condition, is gradually falling to pieces. The building is safe—in fact, much safer than it was when it was taken possession of by the Museum, and I have no reason to believe that disintegration threatens the security of the building as a structure. But I do feel compelled to direct the attention of the Board of Trustees to the necessity which exists, in my opinion, for seriously considering at an early date the welfare of the material whose intrinsic value must be over $3,000,000 and whose educational value is incomputable."

Algologists from Australia

Dr. and Mrs. H. B. S. Womersley of the University of Adelaide in South Australia recently came to the Museum to study the collections of Australian algae in the cryptogamic herbarium. They are on a year's tour of American and European herbaria.

HAIL TO JUNE: THE WORLD'S WEDDING CUSTOMS IN REVIEW

By CHRISTINE TARDY

WHETHER we're conscious of it or not, just about all of us are amateur anthropologists. Simply because we're human beings with egos, we're interested in our own species. Those of us who really let our curiosities loose, though, may become professional anthropologists or, at the very least, amateur ethnologists.

In getting acquainted with the ways of other peoples—reading about them or spending a pleasant hour or two with them vicariously the way you can when you browse among the Museum ethnology exhibits—have you ever caught yourself viewing our own customs objectively? Some of our most deeply rooted customs are fairly unique and sometimes downright shocking to large groups of people in the rest of the world. Our habit of eating beef disgusts the Hindu. The way our women expose their faces offends the moral sensibilities of women of the more remote Mohammedan groups. Our custom of covering the feet with shoes causes people of many areas to shake their heads at such "folly."

Since June is the month of weddings and brides, we inquired about marriage customs. Do other people have the same ideas as to what constitutes marriage? Where do our wedding customs come from? What are other people's weddings like? Here's what we found.

MARRIAGE IS UNIVERSAL

The higher an animal is in the evolutionary scale, the longer its "childhood" lasts. The extended period of immaturity and helplessness requires longer parental care and training. This biological necessity is one of the basic reasons human beings have an institution called marriage. Nowhere are two people of the opposite sex allowed to live together openly and raise children without the approval of the community. This usually involves some kind of ceremony to give publicity to the union. So mankind has a set of customs called weddings.

Human beings are generally monogamous. It just doesn't happen very often that an individual is inclined to live with more than one mate at a time. In our society an individual can have a theoretically unlimited number of legal mates (but not all at once) if he cares to put up with the high cost of divorce and a good deal of social disapprobation. In some other societies, one simply returns one's mate and sets up housekeeping with the new one, with a minimum of legal procedure. Even in societies that sanction multiple-mate marriages, these unions are usually monogamous *in practice*. In a polygynous situation, the husband ordinarily maintains separate households for each wife and her children, living with his wives one at a time. The same thing holds true in polyandrous societies, where the woman has many husbands. She usually maintains a household for herself and her children, and her husbands agree among themselves on the periods each shall spend with her. But although the monogamous state predominates in the world, our view of it as the only permissible form of marriage is a comparatively recent development, limited almost entirely to Western culture.

WHO CAN MARRY WHOM?

Our current ideas of romantic love and free choice are quite new. Most of the world imposes pretty rigid restrictions as to who can marry whom. What one culture considers proper would outrage another, and it frequently happens that culture-prescribed marriages serve to maintain the homogeneity of the group.

In parts of India and among some South Sea island people only cross-cousins can marry. Among some Semitic groups only parallel cousins can marry. There are places where a girl must marry her uncle and a man can marry only his aunt. Incestuous marriages were prescribed for the royal families of ancient Hawaii, Egypt, and the Incas of Peru. When caste stratification occurs, endogamy may exist, where one must marry within one's caste. Or hypergamy may obtain, where a man can marry a woman from a lower section in his caste—this elevates the status of the woman and her family.

Western civilization has its prescribed marriages too, but in subtler forms. One's "blood" isn't taken into account so much as one's income. In parts of Europe until recently a girl and a boy were assigned to each other by their respective families frequently without regard to their personal wishes. In fact, this practice still remains in some parts of the continent. Before the advent of romantic love, marriages were arrangements between parental groups, often with an eye to economic advantage. In medieval Europe young marriageable people of the nobility were mere pawns in a power-and-property game. The peasants often had their marriages dictated by their lords-of-the-manor.

PHILIPPINE WEDDING CEREMONY

Wedding guests in a Tinguian community in northern Luzon witness the first sharing of food between bride and groom, a custom incorporated into the marriage rites of most people throughout the world. In this case the food was a bowl of rice. Photographed by a Museum expedition.

WHIP PRESENTED TO GROOM

There was a time when women were looked upon as vassals of men. In ancient Russia papa would bring a new whip to the wedding and during the ceremony he would strike his daughter lightly with it. Then he would tell her this was the last time—but he would hand over the whip to her bridegroom. In Croatia the bridegroom would box his bride's ears as part of the wedding ceremony, to leave no doubt that he was to be her master henceforth. Nowadays, in our society, men carry a vestige

of this old prerogative over women when papa gives the bride away to her husband.

Marriage isn't always a religious affair. But ceremonies without religious rites are usually very simple. The Eskimos, some tribes of American Indians, some African tribes, and some South Sea island peoples simply have the two set up housekeeping together and inform the community that they are married. Navahos have the young couple eat some maize pudding from the same bowl—this first-sharing symbolizes the union and is, in effect, the marriage.

But in many places, the approval of the community alone isn't enough, and the protection of the gods is sought. Injecting rites of religious significance into the marriage ceremony has served to stabilize the community by binding people to their customs, particularly when religion is the guardian of morals and ethics. And these rites of magic and religion designed to protect the new union—seen by many peoples as a delicate relationship that must surmount many dangers to succeed—constitute many of the complex and colorful customs associated with weddings.

MARRIAGE CODES

All societies have codes either written or unwritten, designed to establish what is lawful marriage and what isn't. People of civilized nations almost always contract marriage by religious ceremonies, but this doesn't necessarily mean that ecclesiastical sanction is or was required. There are many cultures where weddings are lawful without much attention to the gods or their earthly representatives. Buddhist monks look on marriage as a sort of concession to human frailty; so in some Buddhist countries weddings are civil contracts. In China the bridal pair goes to the ancestral hall in the groom's home to prostrate themselves before the altar where ancestral tablets are arranged and ask the blessing of their forebears. Among the Hebrews, marriage was a religious contract, but there is no mention in either the Scriptures or the Talmud of priestly consecration being required at marriages. Mohammedan weddings are simple civil contracts, but they are concluded with a prayer to Allah.

Some of the very ancient civilizations of Europe (especially that of the primitive Teutons) and the Middle East (Egypt, Persia, and India), as well as Greece and Rome in their early stages, wouldn't recognize a couple as lawfully married unless a priest officiated and the ceremony was religious. But later on, as indifference to the old faith increased, in Greece and Rome particularly, religious rites in marriage were regarded as of less importance. Christianity revived the religious character of marriage, although marriage was considered lawful without ecclesiastical benediction until the year 1563 when the Council of Trent made it a religious ceremony. This lasted until the French Revolution, when civil ceremonies were once again considered lawful. Since then, civil marriage has been accepted in most European countries, as liberty of conscience has advanced.

OMENS AND SYMBOLS

Among many people it's very important to choose the right day to be married. Today's American bride is concerned mainly about the weather, if anything, but in Siam the parents of the couple see a fortune-teller to learn whether the young couple's birthdates will permit them to live happily as husband and wife. If the horoscope says no, they can't marry and that's that. In India and among the Mongols and some Turkish nations the same thing holds true for other kinds of omens, which are very carefully prescribed and observed.

MENANGKABAU BRIDE AND GROOM

Here is our cover girl with her groom. His wedding garments are as elaborate as hers. The kris tucked in his belt is the traditional fighting knife of the Malay. These life-size models are exhibited in the Sumatran collection (Hall G).

The same sort of faith and superstition that takes cognizance of omens has led people to the use of certain types of symbols in marriage rites, also with the protection of the union in mind. Symbols used in wedding ceremonies are concerned with sex and gestation, domestic equanimity, economic welfare, and the social ties set up between the groups involved in the marriage. The symbolism found in modern American wedding customs is very similar in purpose to the symbols used by other peoples throughout history, although we go through the motions of these customs without having the same vital reasons for them that our ancestors originally did and have largely forgotten their intended purposes.

It's at the really fancy modern weddings that most of this symbolism comes out. If our modern bride is young and being married for the first time, she wears a white gown, the symbol of purity. The concept that requires the bride to be innocent and untouched is widespread but by no means worldwide. In parts of southeast Asia and China white is associated with mourning and funerals and would be considered very out of place at a wedding; so there the rule is one's brightest and most colorful finery, emphasizing colors that stand for good luck.

Our bride's face is covered by a veil that is lifted only after the religious vows have been taken. This is similar to the custom still found in the Middle East, where only a woman's husband may see her face and she must ever go veiled before other men. In parts of India and southeast Asia, marriages were contracted by the parents and it frequently happened that the two young people had never seen each other before their marriage. When the bride lifted her veil after the couple was lawfully and forever wedded, the groom saw his mate for the first time.

Our modern bride is followed by attendants, among them a little flower girl and a small boy ring-bearer. Children were used in weddings originally in the belief that their presence would make the marriage productive—they are an ancient symbol of fertility. Although symbolism usually involves the use of an object (such as grain) to stand for a concept (such as prosperity), once in a while the real thing becomes the symbol, as when the presence of a child is credited with magic powers to produce progeny.

CUSTOMS ARE SIMILAR

Once our American couple is at the altar, something occurs that is remarkably the same wherever priests, ministers, or religious representatives function in the marriage ceremony. There is a statement of the duties of the mates in marriage and the bride and groom must promise to fulfill these duties. Among the Fiji Islanders, the priest invokes the protection of the gods and then instructs the pair to "love, honor, and obey each other, be faithful to each other, and die with each other"—sounds like our vows, doesn't it? In our ceremony, as in others wherever religious rites are part of the marriage, the priest closes with a prayer for the protection of the marriage.

The new bond created by the marriage is represented by some symbol almost everywhere. In our culture a wedding band goes on the woman's finger—a sign to all men that this female is married. Lately, it has become quite common for our women to put wedding rings on their husbands, too. The Veddahs of Ceylon used a variation with the same significance. The bride ties a thin cord of her own making around her groom's waist, and he wears it all his life. In the Hindu ceremony, bride and groom have their hands bound together with grass (but not for life). The Gonds and Korkins of India make the bond indisputably known by tying together the garments of the bride and groom, whereupon they must dance

together around a pole. Then they must subject themselves to being doused together in water, and finally they exchange rings. Another way to symbolize the bond occurs in the customs of all Indo-European people—joining the hands of the bridal pair. Sometimes this simple symbolizing of the new bond takes on very specialized forms, as in Malacca, where the groom's right hand takes the little finger of his bride's left hand.

In some places social custom causes the difference between a married and an unmarried woman to be made very plain by marking the married woman in a way that is easier to see than a wedding band. In parts of India both bride and groom are marked with each other's blood, which may have led to the more refined and widespread custom of marking the bride with red lead. The Parhayas of India use a red powder called sindur—the groom seals the marriage by putting a dab of this powder on his bride's forehead. An old custom among Polish Jews was the shaving of the girl's head when she married. While still a maiden, the girl wore long, shining tresses, but once married, all the world would know she was a matron, for her head remained shaven the rest of her life.

THE FESTIVE IDEA

When the marriage rites of our modern bride are completed in the church, the whole wedding party proceeds to the wedding feast. This sharing of food and drink can be traced way back and it's the most widespread of all wedding customs. As we have seen, sharing of food between the bride and groom was one of the first customs to become part of marriage rites, and among the simplest cultures it is sometimes the only ceremony they have. In some Brazilian tribes, the bridal pair drink brandy together. In Japan, bride and groom drink a specified number of cups of wine. Scandinavians and Russians used to have the pair share a single beaker's contents.

When the feast is over, our bride and groom try to slip away unobserved to start their honeymoon. But as they leave they are showered with a barrage of rice. This old, old custom symbolizes fertility and is a way of wishing the couple prosperity in all things. Grain played such an important part in early civilizations, when the welfare of the whole community depended on bountiful harvests and many children, that it was a natural symbol to use in wishing the marriage success. Wheat or rice or other grains figure in marriage customs almost everywhere. In some places grain is sprinkled around the nuptial bed.

The feast ends the modern American wedding, unless there is to be a good, old-fashioned "shivaree" or unless some additional special ethnic customs of the Old World are observed. But elsewhere in the world, following the wedding ceremony proper, feasting and celebrating, or fasting and solemn rites, depending on what's deemed most propitious, may go on for days or weeks to insure the success of the new union.

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.)*

CROCODILE HUNTING IN CENTRAL AMERICA. By Karl P. Schmidt. Chicago Natural History Museum Press, Popular Series, Zoology No. 15, March, 1952. 23 pages, 10 halftones. Price $0.25 (plus 4 cents postage on mail orders).

Crocodile-Hunting in Central America is the latest addition to the Museum's Popular Series (Zoology, No. 15). The booklet, by Karl P. Schmidt, Chief Curator of Zoology, tells the story of an expedition he led in British Honduras and Honduras to collect the specimens which now form the large habitat group of American crocodiles in Albert W. Harris Hall (Hall 18).

Mr. Schmidt was accompanied on the expedition by Staff Taxidermist Leon L. Walters. The expedition was not without excitement. Mr. Schmidt on one occasion engaged in a hand-to-hand struggle with a medium-sized but extremely vigorous crocodile, and this specimen, when examined proved to be a "lost species." This species, Morelet's crocodile or the Belize crocodile, had first been described by a French traveler seventy years before, but had been so long lacking from collections since that time that its continued existence had been doubted in scientific circles.

The author tells the story of the expedition, describes Lake Ticamaya in Honduras with its large crocodile population, and explains how the hunting of crocodiles is done, in the face of hazards. Small dugout canoes were used, and the weapons were harpoons, ropes, pistols, and bare hands. Mr. Schmidt also outlines the steps in preparation of the Museum exhibit from the making of plaster molds of specimens at the time of collecting in the field through the involved processes of the plastic reproduction method of taxidermy (invented by Mr. Walters).

Lectures by Botanist

Dr. Julian A. Steyermark, Curator of the Herbarium, recently addressed the Conservation Council on "Observations on Some Conservation Practices in Latin America." He also lectured on "Conservation of Wild Flowers" before the Maywood Garden Club and the Men's Garden Club of Winnetka.

GIANT SNAPPING TURTLE FROM LOUISIANA

Although almost everyone has heard of the common snapping turtle, few know that this reptile has a formidable southern cousin rating as one of the giant fresh-water turtles of the entire world. This cousin, the alligator snapper of the Gulf and lower Mississippi drainages, is twice as big as an ordinary snapper. Chicago Natural History Museum has long wanted to place on exhibition a fine large specimen of the alligator snapper, which reaches a maximum weight of about 200 pounds according to the books. Actually, specimens of that size are exceedingly

MONSTER FROM THE BAYOUS

One hundred and seventeen pounds of a very much alive alligator snapping turtle require careful handling from Taxidermist Ronald J. Lambert.

rare, and much of their weight may be the result of overfeeding and underexercising captives.

After vain efforts of many years, the Museum has at last received from F. L. Caillouet, wholesale shipper of Thibodaux, Louisiana, an alligator snapping turtle in prime condition (unfattened) that tips the scales at 117 pounds and has a shell 27 inches in (greatest) length. The three high ridges of the carapace are beautifully sculptured and there are about twenty growth rings on each plate. This young specimen is in every way suited for exhibition. —C.H.P.

Navy Consults Museum Library

The Library of the Museum was consulted last month in the course of a project to uncover source material on oceanography required by the United States Navy. The survey of material available here was made by E. S. McKay, oceanographer of the U. S. Navy Hydrographic Office, Division of Oceanography.

Coming in July: A special exhibit of Mexican antiquities in Stanley Field Hall.

AN EXTINCT BIRD IS ADDED TO STUDY COLLECTION

By AUSTIN L. RAND
CURATOR OF BIRDS

IT'S NOT EVERY DAY that we add another species of extinct bird to our collection. But we did one day in April. Not through an expedition, not through long correspondence, local collection, or exchange, but by accident we found a specimen sitting on a shelf, overlooked, in a corner of a Museum workshop.

It's a specimen of the huia, from New Zealand, one of about three species of wattled starling-like birds that comprise a family, Callaeidae, restricted to New Zealand. Recently I'd made a hurried review

SURPRISE ACQUISITION
Dr. Austin L. Rand with a fine specimen of the extinct huia found unexpectedly in the Museum.

of the family and found that we had two of the species but that the huia was missing from our collections and that it was extinct. I resigned myself to the thought that probably we'd never get one of them. Then, on this April morning, while seeing to a bird exhibit, I noticed, standing in a dark corner with some miscellaneous material awaiting preparation for exhibition, a dark, pigeon-sized bird with a long, curved bill and an orange mantle at the corners of its mouth. It could only be a huia.

I got it down. It was a well-mounted bird on a polished mahogany stand of the type so popular years ago, with a Ward's Natural History Establishment label on it that bore the correct scientific name, *Heteralocha acutirostris*. Presumably it was among the first birds the Museum received. Probably it was exhibited for a time and then, put aside to be incorporated into our collection, forgotten. Now it goes into our study collection, where under its family and species name it will remain filed, readily available for comparison and study.

Not only is the huia interesting as completing our representation of an obscure family from the antipodes, but it has unique features also. The male and the female have different types of bills—the male a straight bill some 2¾ inches long, the female a curved bill some 4 inches long (our bird is a female). These birds were insect eaters, specializing in wood-boring grubs. But the two sexes go about getting them in different ways suited to their differently shaped bills. The male, with his straight short bill digs into rotten wood for the grubs burrowing there. The female probes into existing cracks and crannies for them. Sir Walter Lawry Buller, writing of a pair he had captive, says that one day a male excavating a grub found the wood too hard to excavate sufficiently to reach his prey. The female, investigating, was able to reach in with her slender bill and get it. This looks like co-operation, but Buller writes that the female ate all of the grub secured by the combined efforts of the pair.

The finding of a rarity, long overlooked, in an obscure corner of a museum, is not without precedent. It doesn't happen often, or it wouldn't be a rarity. Also, it happens less and less often because museums have fewer and fewer obscure corners—they try to utilize space to the full. But sometimes, with a decision postponed, a change put off, or work delayed, something may be put aside for a time that lengthens considerably. The best known case of such a rediscovery is that of Dr. J. P. Chapin of the American Museum of Natural History in New York. While working in the Congo Museum at Tervueren in 1936 he found a mounted pair of strange gallinaceous birds sitting on a cabinet in a corridor. They had come to the museum in 1914. They turned out to represent an undescribed genus and species of African bird—the Congo peacock that Chapin later named. Truly, the ornithologist's material is where he finds it.

Daily Guide-Lectures

Free guide-lecture tours are offered at 2 P.M. daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

Summer Programs for Children

The summer series of free entertainments for children, presented annually by the Raymond Foundation, will begin on Thursday, July 10, and continue for six successive Thursdays, including August 14. Information about the programs, which usually are motion pictures but sometimes include other features, will be in the July BULLETIN. Two performances of each program will be given, at 10 A.M. and 11 A.M., in the James Simpson Theatre of the Museum.

GIFTS TO THE MUSEUM IN PAST MONTH

Following is a list of the principal gifts received during the past month:

Department of Botany:

From: Dr. Henry Field, Washington, D.C.—11 fungi, Florida; E. P. Killip, Big Pine Key, Fla.—143 phanerogams, Florida; Dr. Earl E. Sherff, Chicago—142 prints and negatives of phanerogams

Department of Geology:

From: W. F. Kohler, Seattle—a slab of fossil foliage (*Metasequoia occidentalis* Chaney), Cook Inlet, Alaska

Department of Zoology:

From: Arctic Health Research Center, Anchorage, Alaska—two wolf skulls, Alaska; Chicago Zoological Society, Brookfield, Ill.—a bird skin (rhea); Dr. B. E. Dahlgren, Chicago—36 bats, Cuba; D. Dwight Davis and Robert F. Inger, Chicago—4 lizards and a snake, Texas; Dr. Henry Field, Washington, D.C.—153 insects and their allies, 57 snakes, and 4 gars, Iraq, Iran, and Florida; General Biological Supply House, Chicago—a catfish, Uganda; Harry Hoogstraal, Cairo, Egypt—1,384 insects and their allies, North Africa and Yemen; Ruth Johnson, Chicago—a salamander, Missouri; Dr. James Kezer, Columbia, Mo.—54 salamanders and a frog, United States; David Kistner, Chicago—2 insect paratypes, New Jersey; Peter Letang, Chicago—a block of reef coral, Florida; R. Earl Olson, Rockford, Ill.—3 snakes, Illinois and Minnesota

Henry F. Ditzel, 1880–1952

Henry F. Ditzel, who served as Registrar of the Museum for more than thirty-eight years, died May 21 at the home of one of his daughters, Mrs. Dorothy Ditzel Allen, in Oak Park, Illinois. News of his passing was received with regret at the Museum, where many of his associates are still members of the staff. Mr. Ditzel was in his seventy-second year. He joined the staff of the Museum in 1905 and retired on pension in 1944. He was responsible for maintaining important record systems of the institution and served as an aide to all the Directors the Museum has had, beginning with the first, Dr. Frederick J. V. Skiff.

Paleontologist In Austria

Dr. Rainer Zangerl, Curator of Fossil Reptiles, left for Europe recently. He will investigate an alpine formation of Triassic age (about 190 million years old) in western Austria to determine its content of vertebrate fossils.

Austrian Educator Visits Museum

Dr. Ferdinand Eckhardt, of Vienna, chief of education for the Kunsthistorisches Museum and other Austrian state art collections, visited Chicago Natural History Museum on May 1. He was entertained by members of the staff.

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Chicago Natural History Museum

Summer Movie Time at the Museum

(Announcement on page 8)

Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

MEN WERE ELECTED, BUT ONLY WOMEN VOTED

THERE WAS A TIME when a large segment of the American female population controlled the politics of its territory. Long before women of Western cultures began fighting for suffrage, the Iroquois Indians had an electoral system that enabled women to run things in the Eastern Woodlands.

Some men will yawn at this, having contended grudgingly that women took over and began running everything long ago. But most males will agree that politics is still predominantly a man's realm. Certainly at the forthcoming Republican and Democratic national conventions, women delegates will still be heavily outnumbered by the men. Nevertheless, of course, in choosing a candidate the men will have to consider the huge vote of the women in the November election.

WOMEN HAD THE SAY

Among the Iroquois Indians, however, the choosing of candidates for chieftains was done entirely by the women. The Iroquois in the United States now number only in the hundreds, living mostly on reservations in New York state, and the old tribal organization is no longer maintained. But until the American Revolution, although chiefs were chosen from among the men, the women's influence was so strong that the tribal councils could be said to consist of the women's representatives.

Fifty great peace chiefs made up a council representing all the Iroquois tribes and clans, and these were vested for their lifetimes with supreme executive, legislative, and judicial authority. Each tribe had within it a few particularly select and privileged households that held the hereditary right to elect chiefs to represent the tribe. Iroquois women, not men, owned the houses and property, passed their names on to the children, and elected the chiefs.

When a vacancy on the council was to be filled, the household's chief matron consulted with a few older women of the house to select a candidate from among her sons and grandsons. The Iroquois long-houses contained many people, each family unit maintaining its own "apartment" within the house, but because descent was counted through the female line, husbands were looked upon more as boarders than as part of the family, and the power was in the hands of the wives, mothers, sisters, and daughters.

REGENT SOMETIMES A WOMAN

After a candidate was nominated, the chief matron called a council meeting of all the women of child-bearing age in the house and invited clanswomen from other households, too. If the choice was ratified, the new chief dropped his own name and took the name of the deceased chief, which was also the hereditary title of the office. If an infant was elected, which sometimes happened since close relatives were preferred to more distant ones, a regent discharged his duties until he matured, and this regent was sometimes a woman.

If a chief lost the respect and confidence of his constituents, the chief matron of his household, after warning him twice, could have him impeached in the same way he was elected. So since both impeachment and nominating powers were vested exclusively in the women, they wielded powerful control even though they did not themselves actually hold the chieftainships. However, there was a special class of lesser chiefs called "pine-tree chiefs" similarly nominated and elected, who served as advisers to the chiefs. Held for life, though not hereditary, these influential offices could be and were occasionally taken by women.

An exhibit in Mary D. Sturges Hall (Hall 5) illustrates the Iroquois matrilineal system, which was largely responsible for the women's control of the electoral system of the Iroquois.

To him who in the love of Nature holds
Communion with her visible forms, she speaks
A various language. —BRYANT

THIS MONTH'S COVER

Rapture, excitement, delight, fascination, amusement, complete absorption, and as many other responses as there are faces show up in an audience of children at Museum movies. The films are not galloping and shooting westerns; natural-history films prove just as appealing. Every spring, summer, and autumn the Museum plays host to thousands of children at series of free programs in the James Simpson Theatre. This summer's schedule of programs at 10 and 11 o'clock on six successive Thursday mornings beginning with July 10 will be found on page 8. This time there's even one cowboy program—real cowboys at work on a real ranch, with plenty of riding but no shooting.

MUSEUM SERVES AS HAVEN TO CHILDREN IN SUMMER

Chicago schools closed on June 27. Parents seeking safe, cool, and entertaining havens in which to leave their children for a day or part of a day during the long summer vacation are reminded that the provision of such a place is one of the community services rendered by the Museum. It is open every day from 9 A.M. to 6 P.M. and admission is always free to children.

The Museum welcomes all visitors, children and adults alike, at all times. In issuing the special invitation to children, Director Clifford C. Gregg stresses, however, that the Museum is *not* offering to take small children under its wing on a day-nursery basis, as some parents have occasionally interpreted similar summer-vacation invitations in past years.

Difficult Assignment

A researcher for a television producer recently called the Museum and said:

"We have a spot on our program we would like to devote to Museum material. We would like a speaker to tell, and demonstrate with graphic material, the story of the origin and development of the earth, and also the origin and development of man."

"That would cover a span of one to three billion years. How much time would we be allotted on the program?" the Museum representative asked.

Answer: "Two minutes."

The Lamaist religion, a form of Buddhism introduced into Tibet from India, is illustrated in Hall 32 by images, paintings, sculptures, musical instruments, and other objects used in Lama temples.

ANCIENT MEXICAN ART IN SPECIAL EXHIBIT DURING JULY

The arts and archaeology of ancient Mexico are the subject of a special exhibit to be on view in Stanley Field Hall from July 1 through July 31. The Museum's recent acquisition of an important collection of antiquities by exchange with the National Museum of Mexico has aroused such interest that some of the outstanding pieces have been selected for display.

This exhibit contains examples of pre-Columbian sculpture, ceramics, and lapidary art, including jade work, ranging in age from the Archaic period of 1000 B.C. to the Aztec period at the time of the Spanish conquest in the 16th century. In addition, unusual tobacco pipes of clay and sharp razor-like blades cut from green obsidian are being shown. These artifacts are significant for their aesthetic qualities as well as for what they can tell us of the lives of the ancient Mexicans.

KEY TO ILLUSTRATIONS

The clay mask (top left), about 1,450 years old, is from Teotihuacan. The Mixtec pottery vase (lower left), found in Oaxaca, was made about A.D. 1400. The "two-faced woman" (top right) was once part of a clay figurine made about 1000 B.C. at Tlatilco. The tripod vase with birds for supports (lower right), made about A.D. 500, is from Colima.

STUDIES OF SALAMANDERS UNDER WAY IN MEXICO

What is described as the world's richest field for herpetologists is being combed again by Clifford H. Pope, Curator of Amphibians and Reptiles. Curator Pope left June 16 for a region on the eastern edge of the Mexican highlands where he will continue studies and collecting of salamanders begun on a similar expedition last year.

Approximately 300 kinds of salamanders are known, and they are found chiefly in moist forested regions of Japan and China, the United States, and Central America. They are often mistaken for lizards. "Salamanders found in the United States became separated from those of Mexico tens of thousands of years ago by the big stretch of desert between the two countries, and the present Museum project offers opportunity to study the speciation that was caused by this isolation," Curator Pope said in explaining the objectives of his field work.

"The region we are going to is particularly good for studies of ecology and distribution of species because it's located where tropical jungle meets temperate mountain forests. There are deep canyons where salamander species have been isolated so long that they are different in structure and habits from those found a few miles away. With the many different altitudes and climates we find a corresponding variety of species.

"This Mexican field is new, discovered only a few years ago, and it has been found to have a larger snake and salamander population than any other part of the world. It is very unusual for a field so rich in vertebrate fauna to be discovered at so late a stage in scientific exploration."

Insect-Hunter Returns

Henry S. Dybas, Associate Curator of the Division of Insects, recently returned from a six-week collecting trip to the Southwest and to the West Coast, where he was a guest at the Ralston White Natural History Reservation of the California Academy of Sciences. The purpose of the trip was to collect certain groups of small insects that, because of their small size, are poorly represented in museum collections.

Botanist from Honduras

Dr. Louis O. Williams, botanist at the Escuela Agricola Panamericana, Tegucigalpa, Honduras, recently visited the phanerogamic herbarium of this Museum. Dr. Williams is an authority on Mexican and Central American orchids.

HIGH FASHION IN CHINA UNDER THE MANCHUS

A life-size mannequin of a typical Manchu lady dressed in robes befitting her estate, with characteristic coiffure and adornments, is included in the Museum's exhibit of garments worn by Chinese royalty and nobility in the 18th century. The shoes in the figure are high-heeled in a fashion that outdoes the most fantastic French heel or platform-sole creations, for the heels are in the middle of the shoe sole and the wearer had to balance herself as though on stilts. Nevertheless the Manchu women are said to have developed a graceful walk. Beneath the slit dress of this costume are pantaloons that end with ornate garters at the ankles. Such foibles as rouge, lipstick, and powder were used by Chinese women for thousands of years, and the "compact" and "vanity case" of the modern girl are believed originally to have been Chinese inventions.

Survival of the Fittest

The survival of the fittest is the ageless law of nature, but the fittest are rarely the strong. The fittest are those endowed with the qualifications for adaptation, the ability to accept the inevitable and conform to the unavoidable, to harmonize with existing or changing conditions.—*Dan E. Smalley*

HOW OLD ARE FOSSILS? ROCKS REVEAL SECRETS

By EUGENE S. RICHARDSON, Jr.
CURATOR OF FOSSIL INVERTEBRATES

ASTRONOMERS, GEOLOGISTS, and the U. S. Congress share a preoccupation with larger numbers than the average man has occasion to worry about and should be prepared to explain why their numbers have to be so big. Some time ago, the Museum published a popular handbook under the title, *How Old Are Fossils*, by Sharat K. Roy, Chief Curator of Geology, explaining how geologists determine ages of millions of years for the earth's extinct plants and animals. Astronomers frequently publish clear accounts for the layman, showing why they have to work with billions of miles. And Congress—

CHICAGOANS OF 365 MILLION YEARS AGO

The scene is not a flood after a heavy March rain. At the time reproduced in this habitat group in the Hall of Invertebrate Fossils (Hall 37) the land on which Chicago is now built had not yet risen from the sea. In fact, the bedrock beneath the city was still being formed by tiny grains of limy mud settling to the bottom of a shallow sea where the animal life shown here—cephalapods, cystoids, trilobites, and other creatures—lived in reef-like communities.

But let us return to the fossils. Unfortunately, Dr. Roy's booklet is out of print; it will some day be revised with reference to the fossil exhibits in Frederick J. V. Skiff Hall (Hall 37) and Ernest R. Graham Hall (Hall 38) that are new since it was written. In the meantime it may not be amiss to anticipate some of its information for our readers.

Since the earliest scientific study of fossils, it has been abundantly shown that the fossils in successive beds of sedimentary rocks are different from those in higher or lower layers but similar to those in matching beds even some distance away. At any one place, the sedimentary record is incomplete. For example, in northeastern Illinois, the succession of formations runs, as seen in part in the wall of a quarry, going from the floor up to ground level: Channahon limestone, Kankakee limestone, Rockdale dolomite, Joliet dolomite, Bellwood dolomite, Racine dolomite, Port Byron dolomite. The fossils in each bed are somewhat different from their relatives above and below, indicating the evolutionary changes during the forming of the rocks.

However, a rough separation between the two limestones at the bottom and the five dolomites above indicates that some beds are missing and that the story is incomplete. Therefore we search elsewhere for beds of the missing age and find in a dolomite in eastern Wisconsin some fossils similar to those in the Rockdale dolomite, with beds called Hendricks dolomite, Byron dolomite, and Mayville dolomite beneath. Looking further, we find in the northern peninsula of Michigan not only these three new beds of dolomite but also, lying smoothly beneath them, a bed called the Manitoulin dolomite, whose fossils show that it is of the same age as the Kankakee limestone here at home. Thus, in a roundabout way, the complete geologic record is unraveled and the succession of fossils made known. But though we can call all of these fossils "Silurian" in age and though we know their relative order within the Silurian period, we still haven't found out how old they are in years.

An exhibit in Hall 37 (Fossil Plants and Invertebrates) placed in duplicate at each end of the hall gives the calendar of geologic periods, with their duration in years. The Quaternary period began 1,000,000 years ago; the Tertiary period began 60,000,000 years ago; the Cretaceous period began 140,000,000 years ago . . . the imposing dates roll back through fantastic stretches of time to the beginning of the earth itself, estimated at one to three billion years ago.

How is this possible? How can time have endured so long? How do you know? Naturally, such estimates shock some visitors, and of course some won't believe them.

RADIOACTIVITY GIVES ANSWER

In the geologic calendar exhibit there is space for only a brief explanation:

"Radioactive elements occur in the minerals of many rocks. The disintegration of their atoms, unaffected by heat, pressure, or any other conditions, produces atoms of lead. Chemists, knowing the rate of atomic decay and measuring the relative amounts of the lead and the parent element, have determined the age in years of rocks in many parts of the world. The age of other rocks is estimated from their geological relation with those of known age."

The determination of geologic age is one of the by-products of the investigation of the properties of radioactivity. Since the discovery of the phenomenon in 1896, many chemists and physicists have examined it in pursuing "pure science." As a result, geologists and paleontologists have acquired a wealth of information on which to draw. This is periodically summarized and made available by a Committee on the Age of the Earth, appointed by the National Research Council, and, indeed, certain rock analyses are now made for the express purpose of providing geologic age data. It is a complicated process: several different varieties of radioactive elements commonly occur together, disintegrating at different rates to form helium and different kinds of lead; the amounts of the elements present in a sample of mineral or rock are exceedingly minute; lead or uranium may have been added to or subtracted from the sample by underground water during the geologic past.

From time to time, with the refinement of technique, there have been many revisions of these results, each revision bringing us an enlarged estimate of the length of geologic time. But now it appears that the technique has about caught up with the intricacies of the problem and that future revisions will be minor.

DATING OF FOSSILS

The best age determinations now rest on analyses of mineral crystals contained in certain coarse-grained igneous rocks. How, then, can the age of fossils be estimated? Fossils, of course, are found almost exclusively in sedimentary rocks.

Sedimentary rocks are those formed by the settling of countless individual grains or

particles upon a pre-existing surface. If that surface happens to be composed of a dated igneous rock, we can say only that the sedimentary rock is younger. And if the igneous rock is one that at some time in the past has penetrated a crack in a sedimentary one and there solidified, we can say that the sedimentary rock is older. If, then, a sample can be taken from an igneous body that cuts a sedimentary layer and is in turn overlain by another sedimentary layer, and if those layers contain fossils not widely separated in the known sequence of relative age, a date becomes available for transfer to the calendar of geologic periods.

At present, only a few points in the geologic time scale have been so neatly pinpointed, but those, combined with many radioactive dates quoted as "earlier than" or "later than" some point in the procession, have enabled us to record dates on the exhibits of fossils. While these dates may be subject to some revision as further information becomes available, the amount of change is not likely to be appreciable.

FOSSIL COLLECTORS BACK FROM TEXAS FIELD

The 1952 Texas Paleontological Expedition, continuing a collecting project that has been under way during two previous years, has returned to the Museum. The collectors, Chief Preparator Orville L. Gilpin and Preparator William D. Turnbull, brought back material that is expected to yield further specimens of several extinct orders of primitive mammals for addition to the collections obtained earlier.

This project had its origin in the fortunate discovery in 1949 near Forestburg in northern Texas of mammalian remains of Early Cretaceous age (about 125 million years ago) by Dr. Robert H. Denison, Curator of Fossil Fishes, and Dr. Rainer Zangerl, Curator of Fossil Reptiles. Collecting was undertaken in both 1950 and 1951 by Bryan Patterson, Curator of Fossil Mammals, who is studying and describing the mammalian remains.

The significance of this discovery becomes apparent when it is realized that in all the world only some half-dozen mammals of Early Cretaceous age had previously been found. Now, after intensive field and laboratory work in 1950 and 1951, the Museum may well be proud of a collection of more than 125 pieces of remains of tiny mammals from this Texas deposit. The specimens consist primarily of teeth, microscopic in size, many of which are fragmentary. In addition to the mammals, remains of turtles, dinosaurs, crocodiles, frogs, and fishes occur.

At least four mammalian orders are represented. The most abundant among these are triconodonts and multituberculates, extinct primitive mammals of small size only distantly related to modern mammalian forms. Of greater importance, however, because they are more closely allied to most groups of later mammals, are the much rarer symmetrodonts and the representatives of a new order of mammals, as yet unnamed, related to the pantotheres. Thus, in terms of understanding early mammalian evolution, the value of the Museum's remarkable collection cannot be overestimated.

This year's collecting trip to Forestburg, like those of the previous years, was carried on in co-operation with Texas Memorial Museum. Chief Preparator Gilpin and Preparator Turnbull spent six weeks in the field and about one week in reconnaissance work in the eastern extension of the same Early Cretaceous formation in Oklahoma and Arkansas, but no promising areas were discovered there.

A somewhat unusual method has proved successful in these loosely consolidated sands. The "bone level" is dug out and separated from the remaining sediments; it is then washed through sieves to concentrate the fragments of bone, teeth, and fish scales. The washing process involves two steps. The first is the field operation that serves to eliminate nearly all of the sand and clay (a ton of the original matrix is reduced to about 90 pounds of "bony" concentrate). The 1952 collection yielded 1,750 pounds of concentrate. Back in the laboratory the concentrate is washed again thoroughly so that great quantities of extremely "clean" residue can be examined microscopically to sort the fossil remains.

The machine in which this final washing is accomplished was especially built for this purpose by Preparator Stanley Kuczek. A slow-speed motor causes a series of concentric sieves to revolve so gently through a water-bath that the delicate fossils are never damaged by the tumble action.

Rare Volumes on Butterflies Acquired by the Library

The Library of the Museum recently received as a gift, from Cyril F. dos Passos, of Mendham, New Jersey, a copy of the rare second edition of Eugenius Johann Christoph Esper's comprehensive illustrated publication on European butterflies and moths entitled *Die Schmetterlinge in Abbildungen nach der Natur mit Beschreibungen.* This edition, consisting of six quarto volumes with 441 hand-colored plates, was issued with supplements by Toussaint von Charpentier in the period 1929–39.

Columbus Newsboys Visit Museum

A group of 352 carrier boys from Columbus, Ohio, was brought to the Museum recently under the auspices of their newspaper, the *Citizen.*

Several Museum halls are devoted to plant economics.

NEW TURTLE EXHIBITS

The exhibit of the amphibians and reptiles of the Chicago area was completed last month by the addition of the screen of local turtles to Albert W. Harris Hall (Hall 18—amphibian and reptile section).

Lack of space made it impossible to put the turtle screen with the rest of the Chicago area exhibits, but it is placed nearby although on the opposite side of the hall. The March, 1950, BULLETIN has a full account of this exhibit of local species, including a description of the special techniques used in making most of the models as well as in making the segments of the natural surroundings on which each one stands.

Typical turtles from various parts of the world are shown on the other side of the screen of local turtles. The screens are prepared in the new manner with painted background and raised letters.

STAFF NOTES

Karl P. Schmidt, Chief Curator of Zoology, will represent the Museum on the American Committee for International Wildlife Protection, a post that was formerly held by **Stanley Field,** President of the Museum . . . . **Dr. Alexander Spoehr,** Curator of Oceanic Ethnology, recently attended a two-week international symposium on anthropology held in New York under the sponsorship of the Wenner-Gren Foundation, where he served as chairman of one session . . . . **Clifford H. Pope,** Curator of Amphibians and Reptiles, was recently interviewed by Tony Weitzel, "Town Crier" columnist of the *Chicago Daily News,* and Mrs. (Dorothy) Weitzel on their radio program over station WMAQ . . . . Pictures in which **Miss Nancy Worsham,** Raymond Foundation guide-lecturer, **Miss Lilly Liu Ho,** of the Department of Botany, and **Miss Christine Tardy,** Assistant in Public Relations, posed as brides in exotic costumes from the Museum's anthropological collections were shown on Chuck Acree's WNBQ television program in a June feature on wedding customs.

Technical Publications

The following technical publications were issued recently by Chicago Natural History Museum:

Fieldiana: Botany, Vol. 24, Part III. *Flora of Guatemala.* By Paul C. Standley and Julian A. Steyermark. April 25, 1952. 432 pages. $4.50

Fieldiana: Anthropology, Vol. 37, No. 2. *Bibliography of African Anthropology, 1937–1949. Supplement to Source Book of African Anthropology, 1937.* By Wilfrid D. Hambly. 142 pages. $1.50

The Bird Page . . .

SOCIAL PARASITES AMONG BIRDS

By AUSTIN L. RAND
CURATOR OF BIRDS

THE MOTHER who would leave her infant on a stranger's doorstep to be brought up an orphan, never to know its own parents, is a despicable character in human society. But when we leave man-made society we must leave man-made rules of behavior and man-made prejudices behind. Morals are human. The rest of the animal world is not immoral; it is amoral. It cannot afford criteria beyond survival and reproduction. So when we call certain birds "social parasites," we attach no stigma to them. They represent several groups: the cowbirds; the weavers; the cuckoos; the honey guides; and the ducks.

Carelessness in egg-laying is common even in birds that ordinarily lay their eggs in their own nests and care for them themselves. This accounts for the robins' eggs that you may find on your lawn (which of course are wasted, addling and rotting). Perhaps the fate of the eggs of pheasants and ruffed grouse that are found in the same nest is happier. Ducks usually make their own nests, but many species occasionally lay eggs in the nest of another species, and one South American duck no longer makes any nest of its own but is a social parasite not only on other kinds of ducks but also on coots and some other birds.

The small, well-marked family of honey-guides, of Africa, notable in other ways, is also remarkable for social parasitism. The favorite host species, chosen to look after the eggs and young, are the close relatives of the honey-guides, the barbets (which themselves are most closely related to our woodpeckers). The nesting of certain African weaver-birds was long a puzzle to ornithologists until it was found they, too, were social parasites on other weaver-birds.

VARIED NESTING HABITS

The cowbirds, numbering several species in North and South America, belong to a family notable for variation in nesting habits. Their nests vary from the elaborate purse-shaped structures of the oropendola and orioles to the meadowlark's dome-shaped nest on the ground and the simple cup of the bobolink and red-wing—while the cowbird makes none. The cowbirds' eggs are laid in the nests of a wide variety of other species and left for the foster parents to care for. Here those who discuss the relative importance of heredity versus environment can profit by considering these social parasites. The young cowbird, hatched and brought up by, say, a yellow warbler remains a cowbird. As soon as it no longer needs its foster parents' care it flocks with other cowbirds, with all their mannerisms and characteristics, and next season it mates with another cowbird. There is nothing left of its early environment.

The cuckoos of the United States and some of those of the Old World make their own nests in normal avian fashion. But a number of Old World species are social parasites, and their behavior has long been a subject of study and discussion. Specializations indicate that here perhaps we have the highest stages of social parasitism. Whereas the cowbird may grow up with nestmates that are the young of the foster parent, unless by chance it crowds them out or starves them if it is larger, the young

cuckoo gets the rightful occupants of the nest on its back and throws them out of the nest to perish.

EGGS LOOK ALIKE

Another refinement in social parasitism by the European cuckoo is that apparently certain individuals, and apparently certain strains, lay their eggs only in the nests of certain host species. And these cuckoos' eggs resemble the eggs of the particular species in which the cuckoos' eggs are laid. For example, if certain cuckoos lay their eggs only in the nests of meadow pipits these cuckoos' eggs would resemble those of meadow pipits, while another group of cuckoos specializing in hedge-sparrows would have eggs resembling those of hedge-sparrows.

Another Oriental cuckoo has a color adaptation in the young. In southern Asia these cuckoos parasitize crows, and the nestling cuckoos have black feathers like the young crows. In the Australian area, where the same species of cuckoo occurs, it parasitizes grayish-brown honey eaters and the young are brown, more like the rightful nestlings. Both these resemblances apparently reduce the chances of the cuckoos' offspring being rejected by the foster parents.

Your vacation photographs may be suitable for the coming Nature Photo Contest.

A 'MYSTERY' PEACOCK FROM THE CONGO

A specimen of the rare African or Congo peacock has been received by the Museum as a gift from the New York Zoological Society. Although we sympathize with the New York Zoo in the loss by death of one of its prize birds, we cannot help but be delighted to have this specimen in our study collections.

Its interest lies partly in the recency of the discovery of such a large and showy "new" game bird. The African peacock is the only true pheasant in Africa and is perhaps most nearly related to the Oriental peacocks, as its name implies. The account of its discovery and description reads like a detective story. Of course, there is the added satisfaction of filling a gap in the already fine collection of game birds in the Museum.

The African peacock is a large and beautiful bird of the pheasant tribe. Somewhat smaller than the Oriental peacock, it lacks the long train of that bird but is handsome in its own right. It is blackish, glossed with green on the back and with purple on the lower neck and chest. The sides of the neck are red, and a stiff upright tuft springs from the top of the head.

CLUE IN NATIVE'S HAT

The real-life detective story surrounding the bird's first discovery began when Dr. J. P. Chapin of the American Museum of Natural History was in the Congo in 1913 and found in a native's hat a wing feather of a bird he could not identify. He labeled the feather and saved it. One never knows when such a datum will serve a purpose.

For twenty-four years the feather lay unidentified in New York's museum. Then in 1936 Dr. Chapin was in Europe, continuing his study of African birds in the Congo Museum near Brussels. In passing through a corridor there he saw two mounted pheasants the like of which he had never seen. They were new to science but lacked any indication of origin. Remembering the unidentified feather he had collected in 1913, he compared the feathers. They were the same. This established that they came from the Belgian Congo, and Chapin described the bird as a new genus and species, *Afropavo congensis*.

On a flying trip to Africa, with the clue of the 1913 feather indicating the forest of the Congo as locality, Chapin was able to get specimens and to show that the bird was fairly numerous in one of the little-frequented areas of the Upper Congo forests. Chapin's account of the discovery appeared in 1937 in *Natural History*, magazine of the American Museum.

When Charles Cordier, well-known live-bird collector, was in the Congo for the New York Zoological Society, early in 1949 he collected the male bird that has just come

to us. Along with several others of its kind, it went to the Bronx Zoo in New York. On its death, Lee S. Crandall of that institution recalled the desire of Robert Bean, director of Chicago Zoological Park, that one or more of these rare birds might eventually come to Chicago, and forwarded the bird to this Museum. The American Museum already had specimens of its own.

And yet, wonders do not cease—only by good fortune was it received here in good condition. I was away from the Museum at the time and on my return found ten papers, memos, letters, and telegrams on my desk concerning it. The bird in the flesh, packed in dry ice, had been sent to Chicago by mail, returned by postal authorities to New York for some unknown reason, and then reconsigned to Chicago. Letters and telegrams had passed back and forth. The bird was finally received at the Museum after several days. Fortunately, the long stay in the mails had not advanced decomposition too far. The bird, a male, made a splendid specimen. As soon as it was dry it took its place in our trays of study skins, available to any serious student of African birds or of game birds.

—A.L.R.

FLOOD-CONTROL PROBLEM IN ANCIENT BABYLONIA

As the national conventions of both the Republican and Democratic parties are about to assemble in Chicago this month, it is interesting to find that some political issues persist not only from campaign to campaign but had parallels in history for thousands of years back. Certain to be argued pro and con in the 1952 contest for the presidency and domination of Congress is the subject of flood control.

Flood control was an issue as far back as 2500 B.C. in ancient Babylonia. Efforts to solve the problem seem to have resulted in some successes and some failures. Among exhibits from the Babylonian city of Kish in Hall K (Peoples of Ancient Babylonia) is a flood-stratum deposit of a type found in dwellings of the Early Dynastic period (3000–2500 B.C.). It was found 36 feet below the surface of a mound excavated some years ago by the joint Mesopotamian Expedition of Chicago Natural History Museum (then Field Museum of Natural History) and Oxford University. The slab on exhibition was 10 feet above the present water table. On the surface of this clay deposit there still may be seen the remains of fresh-water fish left behind when the water receded.

The following information, furnished by Richard A. Martin, Near East archaeologist who participated in the surveys and excavations of the Kish area, accompanies the exhibits on this subject in Hall K (Mr. Martin is now Curator of the N. W. Harris Public School Extension Department):

"In Babylonia high water came in the spring during the growing season when flooding the fields would be disastrous. This led to the development of perennial irrigation with a complicated network of canals both to supply arable land with water when needed and to divert the high-water season runoff into nonproductive areas. The canals served also as waterways for the transport of goods. The canals were state operated and taxes were imposed for their maintenance.

"Remains of some of the main canals that supplied the Kish area have been found. Today, in the same area, modern irrigation canals follow the courses of the ancient ones. That many of the canals closely paralleled each other is due to their constant silting. When piles on either bank become too high conveniently to shovel out the silt, it is easier to dig a new canal alongside utilizing one bank of the old.

"To control the floods of the Euphrates and Tigris and still supply the irrigation canals with water, barrages were constructed in the river channel or at advantageous spots, and sections were opened and closed by earth locks and dams.

"During times of political upheaval these control points were left unattended, the natural silting of the river blocked the restricted openings, and a new channel would be cut by the river. . . . Any unusually heavy precipitation at the headwaters of the Euphrates would readily account for the overflowing of the banks of the lower river and adjoining canals."

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From the *Annual Report of the Director* for the year 1902:

"The chief additions to the Department of Ornithology were obtained by Mr. [George F.] Breninger in the field [in Mexico], consisting of 1,500 bird skins, many of which were new to the collections, and 163 eggs. Some minor gaps in the exhibition series were filled by purchase in the local market from time to time. . . . The condition of the specimens obtained by Mr. [Edmund] Heller in the field justifies the great importance which should be attached to this method of obtaining additions to the Zoological collections. This collector's itinerary ranged from Oregon to California and from California to Mexico, and the conscientious manner in which he covered this territory is a matter on which the Museum should be congratulated . . . Mr. [William J.] Gerhard, Assistant Curator of the Division of Entomology, added over 2,500 specimens of insects to the collections."

LOOP STORE TO DISPLAY PRIZE-WINNING GEMS

The prize-winning entries in the Second Annual Amateur Handcrafted Gem and Jewelry Competitive Exhibition, which attracted large numbers of visitors to the Museum in June, are going to the Loop for a second display in July. They will be shown for three weeks beginning July 7 in the jewelry department of Marshall Field and Company.

PRIZE GEM CREATIONS

Mary Oddo, Patricia Stevens model, wears earrings and pin made by Knuth Larson, first-prize winner in the advanced jewelry division of the Chicago Lapidary Club's contest and exhibit. Jewelry in display trays was created by Athalie Young, novice division first-prize winner. Exhibited at the Museum during June, the lapidarists' work moves to Marshall Field and Company to be shown there July 7-31.

The show is sponsored by the Chicago Lapidary Club and includes several hundred pieces fashioned by amateur gem cutters and jewelry makers of Chicago and suburbs. There is a wide variety in the objects submitted by these "rock hounds," as the participants in this craft call themselves. The objects range from polished slabs of gem materials and single cabochon-cut gems to collections of several hundred specimens. Included are many elaborately fabricated jewelry pieces and jewelry sets, and there are even sculptured cups and saucers, bookends, and other household articles carved from blocks of jade and other materials.

A third special exhibit is planned for the early summer of 1953, with the principal showing again in Stanley Field Hall of the Museum. Many of the rock hounds will be working most of the intervening year upon pieces to be entered in that contest. A cordial invitation to submit gem and jewelry creations is extended by the Chicago Lapidary Club to residents of the Chicago area who are interested in this avocation and who have not heretofore participated in these events. They may also join the organized groups now active in this art throughout the year.

MOVIES FOR CHILDREN ON THURSDAYS; FREE

Free-movie time is here again for children. The Raymond Foundation's annual summer series of Thursday-morning programs will begin on July 10 and continue for six consecutive Thursdays through August 14. Two performances of each program will be given, one at 10 A.M. and one at 11 A.M., in the James Simpson Theatre of the Museum. The Theatre and west entrance of the Museum will be open at 9:30 A.M. Following are the dates and titles of the shows:

WAITING FOR THE SECOND SHOW

The Raymond Foundation's popular summer movie-programs for children attract capacity houses.

July 10—NATURE'S HALF ACRE
A Walt Disney color-film showing nature's pageant in all seasons
Also a cartoon

July 17— THE AMERICAN COWBOY
A story of real cowboys and life on their ranch
Also a cartoon

July 24—FISHING TALES
A picture to start you on your own summer adventures
Also a cartoon

July 31—BILL AND COO
An unusual story with birds as the actors

August 7—LAND OF THE PUEBLOS
A color-film of New Mexican Indian pueblos, dances, and fiestas
Also a cartoon

August 14—ANIMAL FRIENDS
Possible companions during your summer vacation
Also a cartoon

Children are invited to come alone, accompanied by parents or other adults, or in groups from organizations. Leaders of groups are requested to seat their children together, to remain with them, and to maintain order during the programs. *Special note:* Although the films are selected for children, they are of interest to adults also and so grownups are welcome to attend. However, because the programs are primarily for children, adults not accompanying youngsters may be requested to give their seats to children if the Theatre is crowded.

GIFTS TO THE MUSEUM IN PAST MONTH

Following is a list of the principal gifts received during the past month:

Department of Anthropology:

From: Gracia M. F. Barnhart, Hinsdale, Ill.—model of totem pole, British Columbia; Dr. Erik K. Reed, Santa Fe, N.M.—3 prehistoric adzes and pottery, Mariana Islands

Department of Botany:

From: E. J. Palmer, Webb City, Mo.—552 phanerogams, Missouri; Dr. E. P. Killip, Big Pine Key, Fla.—13 phanerogams

Department of Zoology:

Dr. B. E. Dahlgren, Chicago—9 frogs, a lizard, and a snake, Cuba; Chicago Zoological Society, Brookfield, Ill.—3 bird skins; Illinois Natural History Survey, Urbana—a bird skin; Dr. L. H. Held, Arlington, Va.—70 wasps and 39 galls; Dr. Robert Rausch, Anchorage, Alaska—a wolverine, Alaska; Bernard Benesh, Burrville, Tenn.—180 insects, 10 exotic stag beetles; Walter Auffenberg, Gainsville, Fla.—a snake, Florida; Harry Hoogstraal, Cairo, Egypt—138 insects and 11 bird skins; J. H. Shirk, Peru, Ind.—6 jaguar skulls, Venezuela; Lloyd Herbert, Tomo River, N.J.—3 turtles, New Jersey; Ross Tarrant, Palm Beach, Fla.—9 marine fishes, Palm Beach, Florida; U. S. Fish and Wildlife Service, Pascagoula, Miss.—80 deep-water fishes, Gulf of Mexico; Dr. Mario Sanchez Roig, Cuba—a collection of land and fresh-water shells, including several paratypes, Cuba; Lillian A. Ross, Chicago—a snake, Illinois; P. Quentin Tomich, Robles del Rio, Calif.—358 insects, Egypt; Lt. Col. Robert Traub, Washington, D.C.—197 insects, Borneo

Library:

From: Henry Dybas, Hazelcrest, Illinois; William J. Gerhard, Chicago; Eugene S. Richardson, Jr., Gurnee, Illinois; Karl P. Schmidt, Homewood, Illinois

N. W. Harris Public School Extension:

From: John H. Crea, Fargo, N.D.—a mounted pileated woodpecker

Rewards of Research

The great scientists, as all great men, have not been concerned with fame. The joy of achievement that comes from finding something new in the universe is by far their greatest joy. A great research scientist is constantly discovering new things in his field. This is his reward. He knows how to spend long years in preparation and long hours in investigation, with no thought of public honor or reward.—*William P. King*

TWO LECTURE TOURS DAILY IN SUMMER

During July and August the conducted tours of the exhibits will go on a two-a-day schedule, mornings and afternoons (Monday through Friday). Each morning tour, except Thursday, is a general survey of one department of the Museum. The afternoon tours (and Thursday morning) are general surveys of the highlights of the exhibits. The schedule follows:

Mondays: 11 A.M.—The World of Animals; 2 P.M.—Highlights of the Exhibits

Tuesdays: 11 A.M.—The Earth's Story; 2 P.M.—Highlights of the Exhibits

Wednesdays: 11 A.M.—People and Places; 2 P.M.—Highlights of the Exhibits

Thursdays: 11 A.M. and 2 P.M.—Highlights of the Exhibits

Fridays: 11 A.M.—The Story of Plants; 2 P.M.—Highlights of the Exhibits

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for groups of ten or more. Requests for this service must be made to the Director of the Museum at least one week in advance.

There are no tours on Saturdays and Sundays (or on Friday, July 4), but the Museum will be open to visitors on those days during the usual hours, 9 A.M. to 6 P.M.

Studies in Corn Genetics

Dr. Edgar Anderson, assistant director and geneticist of the Missouri Botanical Garden, St. Louis, recently visited this Museum to examine the collection of corn and prehistoric plants. He discussed problems in the genetics of corn with Dr. Hugh C. Cutler, Curator of Economic Botany here, who is engaged in studying the vast amount of prehistoric agricultural material recovered from caves excavated by the Museum's Southwest Archaeological Expeditions of the last two years.

NEW MEMBERS

The following persons became Museum Members from May 19 to June 13:

Associate Members

Max Pray, Mrs. Frederic P. Vose, Rowland L. Williams

Annual Members

B. J. Babbitt, Alfred E. Bolt, Leo Sanford Blustin, G. E. Cogswell, J. Lester Cunningham, John F. Czachorski, Miss Genevieve M. Farls, Dr. George Fenyes, John O. Giles, Robert F. Grohe, Henry S. Kahn, Howard Knight, Richard W. Kritzer, Seymour J. Layfer, William S. Picher, Dr. Bruce A. Spooner, John M. Thornburn, Frank H. Thorne, Albert S. Vinnedge, Mrs. Edmund J. Von Henke, Philip M. White, Frank H. Yarnall, Sidney M. Yavitz

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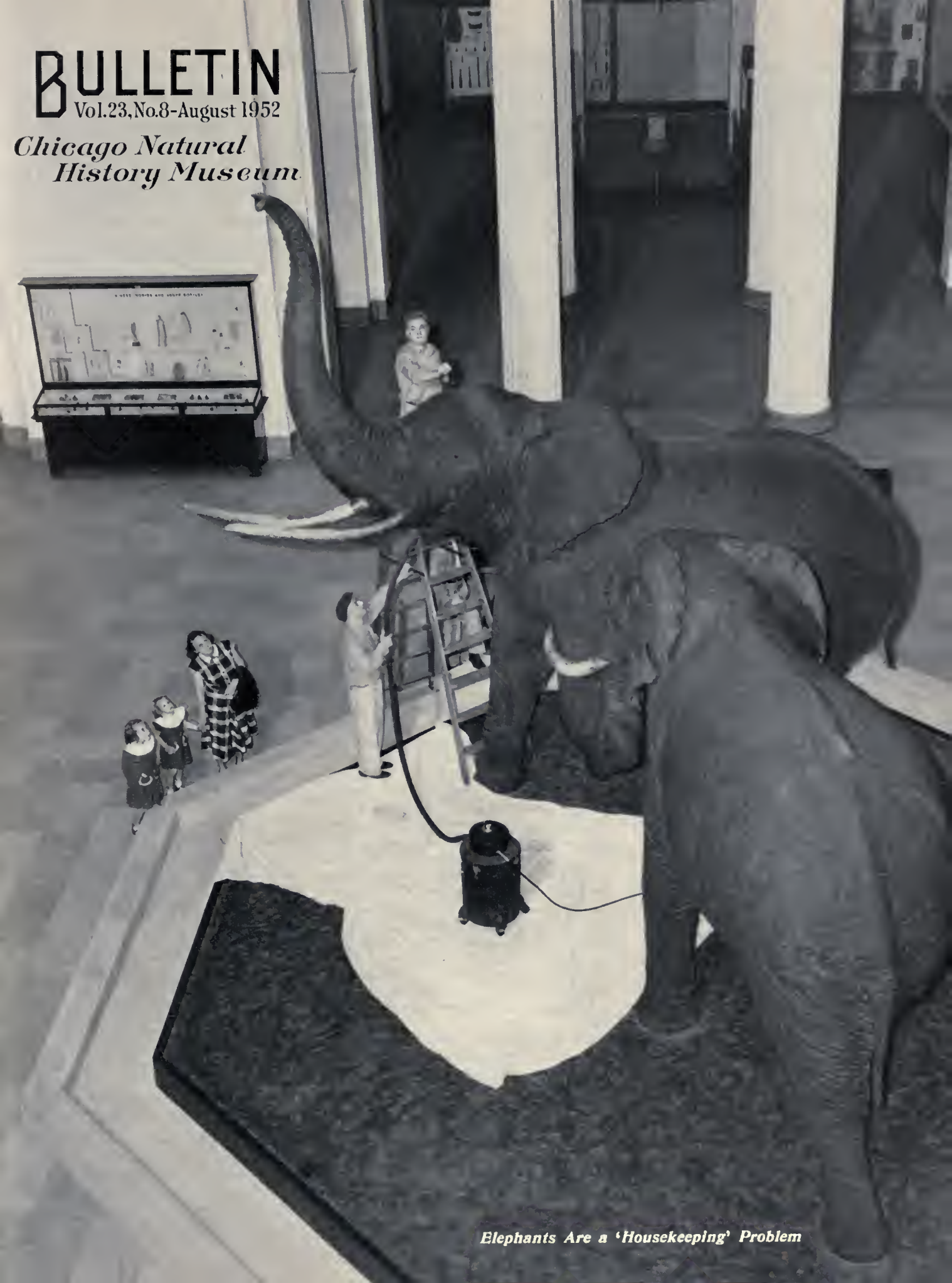

Elephants Are a 'Housekeeping' Problem

Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

Jungle Hide-and-Seek . . .

GORILLAS AND ELEPHANTS PLAY IT ROUGH

BY AUSTIN L. RAND

CURATOR OF BIRDS

Since January, 1951, Harry A. Beatty, of New York, has been collecting birds and other animals for this Museum in Gaboon and Moyen Congo, French territory just north of the lower Congo River. In recent letters to the Museum he characterized the location of his camp near the coast as a "wonderland of swamp forest." Officials and missionaries in the area were helpful and hospitable.

Forestry is a major industry in Gaboon, though the scarcity of natives has necessitated importing labor from the nearby colonies. Thus, getting local help for zoological collecting proved almost impossible. Offers of forestry stations and lumber camps as quarters have been a great help to Mr. Beatty. The dense, rank vegetation makes collecting difficult. It is one thing to shoot a forest bird at a glimpse after playing hide and seek for half an hour, and another to find the downed specimen.

Transportation is always a difficulty in scantily inhabited country, and this is true of Gaboon. A few roads, impassable in the rains, supplement river travel that may become difficult when the water is low in the dry season. On one river trip, after Beatty waited days for a boat, it came at last, towing a barge-load of soldiers.. Spinal meningitis broke out and they were all quarantined for ten days. However, progress has reached these regions, too, and airplane transport is available to some places.

Gaboon is lowlands, like most of West Africa. But when Beatty was camped inland he was within reach of a few low wooded hills where there has never been adequate zoological collecting, and this leads to hope that he will find this a new station for some of the birds typical of mountain habitats and otherwise known in West Africa only on Mount Cameroon. It was near here that the rare lyre-tailed honey guide, known from but twelve specimens, was heard by Beatty, although he had not collected it at the time of writing. One can be directly below this bird that lives in the tops of forest trees, hear its flight song, and yet not catch a glimpse of it through the dense foliage overhead.

GORILLAS SPREAD TERROR

An American intent on photographing gorillas visited Beatty at one camp. Beatty himself has encountered gorillas. He writes, "I have had several terrifying experiences and hope they are the last. In three weeks I saw two men with feet and hands crushed and the last man had his scalp ripped off and the muscles of arms and back ripped away by a huge gorilla. He died."

Beatty tells of rains and droughts but he seems nevertheless to like West Africa. He writes, "A white Christmas is lovely to look at but I prefer the endless spaces of Plateau Bateke. I killed a buffalo and had a cheerful season with the four French families here." In this locality he got a black-and-yellow weaver bird known from but a single specimen in 1930, and a tiny lark described from Ruwenzori. He also investigated the hybridization of two other black-and-yellow weaver birds. A number of French residents are interested in the birds, and their advice is helpful. From one Beatty obtained a collection of about 250 skeletons of birds that will be a very useful addition to the Museum's Division of Anatomy. An all-black forest guinea fowl is included among rarities from this forest area.

The Oubangui River, the tributary of the Congo that divides French from Belgian Congo, was visited by Beatty when the water was low. Never less than a mile and a half wide, it is dotted with islands and sandbars on which many ducks, geese, and ibises rest. These birds come in the dry season from the Lake Chad area to the north on the edge of the Sahara.

Traveling by motor boat for a time with the local physician, Beatty and the doctor stayed nights in natives' huts, which are few and far between in this forested country. Beatty writes, "One night elephants paraded near our hut and squealed unpleasantly. . . . A huge elephant rubbed his broadside across the corner of my hut, ripped it away, and the roof fell in. It was a frightful experience in the middle of the night."

On the sandbars of a river, Beatty located breeding colonies of the red-billed swallow. This swallow is all blackish. Its bill is large for a swallow and bright red. For years little was known about this bird, and it was thought to be the sole representative in Africa of the Asiatic wood swallows. Then it was discovered nesting in the Congo, its habits learned, and specimens dissected, and it seems to be a true swallow. By visiting the colony at night, where the birds had placed their nests at the ends of burrows dug by themselves in sandbars, Beatty found that both male and female sleep in the nest burrow—the female with the eggs or young, the male in the entrance where he slips away when disturbed.

I have finished listing the birds so far sent by Beatty and find 308 species represented. The specimens provide us with range extensions, examples of many rare species known from only a few specimens and at least one species that is probably new to science. In adding new birds to our collection the West African Expedition rates very high.

THIS MONTH'S COVER

The famous fighting elephants in Stanley Field Hall require a "beauty treatment" with a vacuum cleaner on an average of twice a year. The story of how this and other "housekeeping" problems of the Museum are solved is told on page 6. The elephants were collected in Africa in 1906 by the late Carl E. Akeley, who mounted them shortly thereafter. The group remains to this day one of the Museum's outstanding exhibits.

Many Beduin Arabs of North Africa believe in the existence of demons (affrits) who are supposed to carry out evil designs under direction of a chief. Primitive rock engravings and even the desert itself are attributed to these demons. Divination and omens are seriously regarded and the evil eye is greatly feared. As protection against these influences, the people resort to amulets and tattooing.

Manufacture of glass ornaments from melted-down European glass is one of the rare occupations of West African tribes. Some examples are in Hall D.

HEAT SUFFERERS: HERE'S HOW TROPIC NATIVES KEEP COOL

By CHRISTINE TARDY
BULLETIN STAFF WRITER

IT'S BEEN A HOT SUMMER. These hints for helpless sufferers are offered because there is every indication we're in for many more scorchers. So mop your brow, sit down near a fan, put a frosty drink in your left hand, and in your right hold this discourse and read on.

People, wherever they happen to be born, find that maintaining a comfortable Fahrenheit environment for themselves is a constant if not foremost concern. And of course, until very recently in human history, the materials directly at hand had to be used to achieve this comfort.

BUNDLING UP TO KEEP COOL

Staunch supporters of the viewpoint that full cover protects against heat, this upper-class Nigerian couple demonstrates the use of many robes to escape the direct rays of the sun.

We hope it won't be much longer before everybody everywhere has access to the know-how of science, so that, between the availability of lower-cost air-conditioning units and (perhaps soon) reasonably-priced atomic fuel, ideal temperature conditions can be maintained and we can nearly forget to complain about the weather. However, it will probably be some time before science devises a way to control the outdoor temperature to everybody's satisfaction; so sunstruck residents of the Temperate Zone may profit from an examination of the methods Tropic Zoners use to adjust themselves to the heat.

THE CLOTHING CONTROVERSY

How to dress is a prime consideration. There are two schools of thought on the clothing question, which we may divide roughly into the Continental Faction and the Island Faction. Probably majority opinion lies with the Island Faction, which contends that the only way to beat the heat is to reduce clothing to the minimum. But the fairly influential Continental Faction vouches for the effectiveness of complete covering.

It happens that the Continentalists inhabit by far the hotter climes. Equatorial areas on large land masses do not have the cooling relief of trade winds known to the islands, which are additionally blessed with the insulation of the surrounding waters. There are three general types of hot environments found on earth, the conditions of which will vary a bit according to the size of the land mass. The hottest environment is that of the dry lands or deserts. Although the mean temperature can be reckoned at 65 degrees Fahrenheit for deserts, one of their most striking climatic features is the daily change in temperature. In Salah Oasis in the Algerian Sahara, the temperature has been known to rise within twenty-four hours from 26 degrees to 126 degrees Fahrenheit. Azizia in Libya holds the record at 136.4 degrees Fahrenheit.

According to an account by Dr. N. B. Tindale of the Adelaide Museum in Australia, ethnologists who have traveled with native hordes in central Australia's vast desert report that the aboriginals, who are naked, can sleep only with difficulty. Most of them huddle around their fires at night. Early in the morning, before sunrise, they get up and begin to move around. Their tempers are short and frequent quarrels arise. Then, when the sun has risen clear of the horizon, they begin to quiet down. By noon the sun is beating unmercifully upon them and everyone who can has found shelter.

The two other principal types of hot environment are found in the tropical forest lands. Rain forests know no seasons and the temperature is very constant, ranging between 70 and 80 degrees Fahrenheit all the time. It usually rains two or three times a day every day, and the humidity discourages human habitation. Semideciduous forests constitute the other type of humid tropical environment. This is the true jungle, with very heavy undergrowth beneath the trees, which are spaced less densely than in rain forests. There are seasons in this type of environment—dry and wet—and both are hot.

THE COVER-UP VIEWPOINT

The Nigerians of British West Africa are advocates of the cover-up-to-keep-cool school of thought, according to Dr. Wilfrid D. Hambly, Curator of African Ethnology. In the southern part of Nigeria, mainly forest land, it is hot and moist night and day. There is only a small temperature fall at night. By day this humid heat averages 85 to 95 degrees Fahrenheit, falling to 80 or 85 degrees at night—a sort of Louisiana type of climate. Northern Nigeria, which is open semidesert country bordering on the Sahara, is hot and dry except in the wet season. It is an Arizona type of climate—cool in the early morning, reaching 110 degrees in the sun at midday, and cooling rapidly after sunset to 50 degrees before morning. Perhaps in the interest of an economical, all-purpose wardrobe, but more likely because of the influence of the Arabs, the Nigerians wear two or three cotton robes, full-length, one over the other, which, with turbans or big straw hats, protect them from exposure to the sun. This, of course, is the keep-cool method favored by desert inhabitants, who must cover from head to toe as protection against sand and dust in addition to warding off the night chill and the daytime heat.

The Nigerian dogma, however, is summed up in the admonition, "Keep out of the sun." And from local materials the Nigerians have devised a most effective cool house. The walls are made of mud and clay, 18 inches to two feet thick. Large jars of water are hung in doorways and passageways to catch any breeze. Thus the Nigerians have been utilizing one of the principles of air-conditioning long before the machine age.

MANY PREFER MINIMUM GARB

This woman of New Guinea is aligned with the majority of the world's equatorial residents in her contention that the best way to keep cool is to wear little clothing. The materials at hand supply her simple wardrobe.

The Island Faction contends that clothing should be dispensed with as much and as often as possible, although adherence to this viewpoint has in the past few hundred years met with ecclesiastic opposition. Where the missionaries have run into strong-willed resistance, however, comfort has not been sacrificed in the interests of respecta-

bility and godliness, and we still find islanders who are practicing the clothing customs evolved over the centuries as the most practical adjustment to their difficult climates.

Where token covering is customary, says Dr. Alexander Spoehr, Curator of Oceanic Ethnology, it is frequently no more than a loincloth for men and something made of grass for women. Lately, of course, cotton and other fabrics used by us have reached the most remote peoples, so that the fabrics formerly utilized, fashioned of the materials at hand, are fast going out of use. It's perhaps unfortunate, because the cloth made from the natural fibers they had was porous and cool. Tapa cloth, for instance, made by beating bark into a fine, thin cloth, was cool to wear. Women of the Marshall Islands wove fiber or grass mats slightly larger than place-mats, and created a simple, cool costume by tying one fore and one aft with a sash. Grass skirts, of course, are what come to mind when we think of tropical island costumes, and these are, in fact, very popular. Even for the men in

NON-MECHANICAL 'AIR CONDITIONING'

In the Nigerian's house thick mud and clay walls provide good insulation. Small windows set high and jars of water in doorways are effective ways to cool off the air circulated within. The designs are worked in while the clay walls are still wet.

some places, grass skirts are preferred to other types of clothing. Not only are they cool, but the swaying strands of grass serve to dispel flies.

AVOID TIGHT CLOTHING

Where cotton and other "civilized" fabrics have been introduced and accepted, tropical peoples have largely foregone western styles and have devised cool methods of draping the material. In Bali, a length of cotton is wrapped rather loosely around the torso. In Mexico and South America, where clothing more like ours is worn, loose-fitting garments have also been found cooler. Try it yourself. If you must keep your shirt on, men, loosen your cuffs and collar and pull out your shirt-tail. Women are urged to avoid anything tight. Ventilated sandals, full skirts, and loose blouses have been found cooler by women from the warm countries who wear clothing somewhat similar to ours.

Although Islanders, even right on the equator, generally have an easier time of it with the heat than do residents of the continental heat belts, the humidity remains high all of the time, and so devices to catch

VENTILATED TROPICAL HOUSE

This house at Wahda, Dutch New Guinea, uses a raised floor to avoid the ground dampness. Large windows admit breezes from the trade winds.

breezes have been worked into their scheme of living. Of all the islanders, the Samoans have perhaps the most efficient house for keeping cool. It's a round hut with a conical thatched roof. Between posts driven into the ground in a circle to support the roof, the Samoans hang fiber mats very similar to the bamboo blinds now in vogue among modern decorators. Like these blinds, the mats roll up. So for cool comfort, the Samoan rolls up his walls and catches breezes from the trade winds. If he wishes some privacy rather than the breezes, he can roll the walls down.

SLEEP ON THE FLOOR

On many tropical islands, houses are built with raised floors, mainly to keep away from the dampness of the ground. Where this is done, grass mats serve as beds. Cool because they are ventilated, mats placed directly on the floor make a fine place to sleep since the house is ventilated by cool air and breezes coming from below.

Within any house or shelter, it is possible to devise temperature controls simply because there is a limited enclosed and protected area with which to work. Roofs keep out the sun and, if insulated in some way, will keep out much of the heat. Throughout the world's hot areas, houses are kept cool by the design of the house itself and by the use of fans or other cooling devices. In Arabia, the masonry houses are built with lattice windows and small apertures high up in the walls to insure a constant flow of air. In India, where there is a great division of labor, special servants keep huge fans, called punkahs, in motion by continually pulling on ropes. By the constant movement of these punkahs, an artificial circulation of air is achieved.

TROPICAL NEURASTHENIA

Every one has noticed that it is difficult to work in hot weather. You're more tired and have trouble sleeping. Everything seems harder to do. You miss a bus rather than run for it as you might in cooler weather. You relish sedentary work in preference to active kinds. Human beings everywhere react in much the same way, and peoples of the tropics have had to cope with this sort of lethargy to get anything done. The Marshall Islanders avoid the sun and do all of their work in the shade whenever possible. Most tropical inhabitants do the bulk of their work in the early morning and late afternoon, and close up shop for the noon hours when the sun is hottest. The siesta is a Mediterranean custom, but something similar to it is found in all hot climates. There is in our culture a tendency to cut down on working hours during the summer months, but regrettably there is no Mandatory Siesta Movement under way.

The effects of discomfort that we all experience when it gets too hot may be minor manifestations of what can become tropical neurasthenia if it is prolonged under certain types of conditions. Interestingly enough, this disorder is unknown to natives of tropical environments and is suffered only by foreigners, particularly women. The symptoms are irritability, disregard for one's person, mental depression, loss of weight and appetite, and chronic digestive difficulty. It has been suggested that tropical neurasthenia is caused in part by boredom, the inability to adapt to a new environment, unvarying humid heat and rain, lack of exercise, and overindulgence in alcoholic beverages.

Tropical neurasthenia is unknown in our part of the world, but the things that happen to the minds and bodies of Temperate Zoners in hot weather may be embryonic hints of it. That's a sufficient reason for getting acquainted with the ideas and methods of people who endure extremes of temperature the year around. A visit to the ethnology exhibits in the Museum might provide you with some additional ideas for cooler living. Especially recommended are exhibits from Melanesia (Hall A), Australia (Hall A-1), Africa and Madagascar (Halls D and E), Polynesia and Micronesia (Hall F), Malay regions (Hall G), and the Philippine Islands (Hall H).

MRS. BUCHEN TELLS STORY OF AFRICAN BIRD HUNT

The Buchen East African Expedition left Chicago in May. It is sponsored and led by Walther Buchen of Winnetka, Illinois. One of the main objectives of the expedition is to collect material for a Museum habitat group showing the abundant bird-life of the marshes of the Upper Nile. The site chosen was Lake Kyoga on the Victoria Nile, in Uganda. Mrs. Buchen, a member of the party, recently wrote from the camp in East Africa:

"You will probably be surprised to hear that we are back from Uganda with the collection practically complete and that it will be off from Nairobi by air-freight some time next week. . . . Things have gone much more rapidly than we expected.

TWO WHALEHEADS COLLECTED

"I think the group should be quite fine. The whalehead [stork], of which we have two good specimens, is most impressive, if not beautiful, and the lovely crowned cranes make up in a big way for this deficiency—several pygmy geese will be another fine touch. We have a group of the brilliant scarlet West Nile bishop, seen everywhere in the marshes of Kyoga; also a group of beautiful Uganda yellow-collared weavers with nests and eggs taken from the edge of the lake—and a pair of the colorful little malachite kingfishers—all bright purple, blue, and cinnamon—with scarlet bills.

"To date we have about 170 specimens. . . . The saddlebill storks and the great white egret, which we failed to get in Uganda, we hope to pick up in Tanganyika. They were impossible to secure near Lake Kyoga. Rare as they were, they were always in the exact center of tremendous marshes with no cover available. Walther [Mr. Buchen] tried bravely slogging through mud and water up to his waist at times but never succeeded in getting close enough. . . . We are glad to get out of Uganda where the climate is hot and humid—mosquito-infested near the lake.

PELICANS THRONG SKY

"But as I sit here in front of the tent in our camp overlooking Lake Naivasha in Kenya (about 6,000 feet), it is cool and lovely—a great battalion of pelicans is displaying its wonderful wheeling and circling maneuvers in the sky before me, four crowned cranes have just alighted down the hillside, two whiteheaded fish-eagles are screaming wildly nearby, and in the distance a hoopoe is calling.

"It is all wonderfully interesting and quite as thrilling as lion hunting."

The Buchen expedition's first shipment, sent by air from Africa, arrived at the Museum July 17. It consisted of about 170 birds, including the whalehead storks, crowned cranes, and many herons, ducks, plovers, and other marsh birds. The expedition is continuing field work and further shipments are expected soon.

WHALEHEAD STORK

Dr. Austin L. Rand, Curator of Birds, and Taxidermist Carl W. Cotton with giant-sized prize of the collection received from Mr. and Mrs. Walther Buchen who are still in East Africa on an expedition for the Museum. The specimen is for use in a habitat group showing a papyrus marsh of the Upper Nile Valley teeming with bird life.

TWO LECTURE TOURS DAILY IN AUGUST

During August the conducted tours of the exhibits will be presented on a two-a-day schedule, mornings and afternoons (Monday through Friday). Each morning tour, except Thursday, is a general survey of one department of the Museum. The afternoon tours (and Thursday morning) are general surveys of the highlights of the exhibits. The schedule follows:

Mondays: 11 A.M.—The World of Animals; 2 P.M.—Highlights of the Exhibits

Tuesdays: 11 A.M.—The Earth's Story; 2 P.M.—Highlights of the Exhibits

Wednesdays: 11 A.M.—People and Places; 2 P.M.—Highlights of the Exhibits

Thursdays: 11 A.M. and 2 P.M.—Highlights of the Exhibits

Fridays: 11 A.M.—The Story of Plants; 2 P.M.—Highlights of the Exhibits

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for groups of ten or more. Requests for this service must be made to the Director of the Museum at least one week in advance.

There are no tours on Saturdays and Sundays but the Museum will be open to visitors on those days during the usual hours, 9 A.M. to 6 P.M.

Vacations Offer Opportunity For Nature Photo Entries

Vacationers are urged to think now about putting aside some of the best photographs they make on their travels for entry in the next nature-photo contest. Pictures of animal life, plant life, geological formations, scenery, etc.—either black-and-white or color prints or color transparencies—will be eligible for the silver medals and ribbons to be awarded in various classifications. The month-long Eighth Chicago International Nature Photography Exhibition, jointly sponsored by the Nature Camera Club of Chicago and the Museum, will be held next February in Stanley Field Hall. A deadline for entries, about the middle of January, soon will be announced.

National Science Foundation Grant to the Museum

Recently the National Science Foundation approved a three-year grant to Chicago Natural History Museum for use by the Department of Botany in support of "A Study of the Flowering Plants of Colombia" by Dr. José Cuatrecasas. For the past two years Dr. Cuatrecasas was a fellow of the Guggenheim Foundation.

Housekeeping for a Museum . . .

GETTING BEHIND THE ELEPHANTS' EARS CALLS FOR A MOTHER'S TOUCH

By H. B. HARTE
MANAGING EDITOR

THERE'S A LOT MORE to running a museum than preparing exhibits, going on expeditions, conducting research, and the other activities of the scholarly men on the scientific staff. Take the matter of housekeeping, for example—

The housewife who frets over the problems of keeping her house or apartment tidy should find it easy to sympathize with "Jim" Shouba, Superintendent of Maintenance, and "Bill" Lake, Chief Engineer of Chicago Natural History Museum. They and their corps of some 55 men and women helpers are responsible not only for the normal maintenance tasks required in any building comparable in size to the Museum but all of the special problems presented by thousands of exhibits whose cases must be kept clean and in which proper lighting must be provided at all times.

This huge job is complicated further by several hundred thousand sticky fingers of children that simply cannot be prevented from leaving their imprints on the glass. As a matter of fact, since sticky fingers are a normal attribute of childhood and the Museum administration wants all of the children of Chicago and elsewhere to benefit from its educational offerings, the marks on the glass and the labor entailed in removing them are accepted as inevitable—we would much rather have these problems than not have the children. The marks also indicate what exhibits are most popular. And no doubt a good portion of the fingerprints are left by grownups, too, among the more than a million and quarter visitors who come in an average year.

SEVENTEEN ACRES TO CLEAN

What kind of a job is it that Shouba and Lake face in keeping the Museum clean, properly heated, and properly lighted? Well, there are some 17 acres of floor space, including the three exhibition floors, the James Simpson Theatre and lecture halls, and the offices, laboratories, and workshops of the scientific and administrative staffs. Of this area, approximately 12 acres comprise exhibition halls, and in these the vertical problem—the glass in the cases totaling approximately 200,000 square feet of surface—constitutes more of a giant's chore than is usually encountered in the total maintenance of any type of structure. Also, there are about 1,700 windows to be kept clean. In addition, the roof, an expanse of some four and one-half acres with enormous skylights over Stanley Field Hall, requires considerable vigilance. To heat the vast area encompassed in the Museum, about 4,300 tons of coal are required between late fall and spring. On the coldest winter days as much as 40 tons are burned in a single day.

One of the more spectacular maintenance jobs that always draws the interest of visitors who happen to be present when it is done is that of vacuum-cleaning the elephants. These animals form so conspicuous and familiar a central attraction in Stanley Field Hall that they have come to be a kind of symbol of the Museum. The task of pachyderm beauty treatment requires the time of two men for about four and one-half hours and calls for tall ladders and special vacuum-cleaning equipment.

"This job is the same as with kids—it's getting them clean behind the ears that's hardest," said James Higgins, one of the workers who helped in the most recent of the semiannual primpings of the elephants. "Of course, the fellow with his trunk lifted away up in the air gives us a time, too—reaching the tip."

The work on the trunk is done with a "wand," but it's *work*, not magic. The wand is a long extension pipe with a special type of suction-nozzle, and manipulation of this overgrown bit of housecleaning equipment is difficult. As for the ears, they are hard to reach and to get under. Sometimes when weather and other conditions make the skin brittle, treatment by the taxidermists is necessary to make it flexible, repair breaks, and touch up the color.

Another major task in Stanley Field Hall is the periodic cleaning of the six huge and heavy chandeliers that hang high over this great central exhibition area that reaches from the first to the fourth floor and into which the principal (north and south) entrances of the building open. Along with the cleaning of these large, elaborate, and delicate light sources, all dead or weakening electric bulbs are replaced. But it is the task of lowering and re-raising them that poses complications. This is done with cables from windlasses at each end of the roof. Two men are required to crank the windlasses, while two others are stationed at strategic points in the clerestory to signal the precise second for starting or stopping descent or ascent so as to avoid damage. On the floor of Stanley Field Hall a group receives each chandelier as it is lowered and goes carefully to work upon it.

CATWALK CRAWLING

Speaking of maintenance of lighting facilities, no housewife in her home would go through what is necessary to provide proper illumination for Museum exhibits. Most of the exhibition cases for habitat groups and dioramas are lighted from ground-glass light boxes above the exhibits, out of sight of those viewing the groups. To reach these to clean the ground glass or replace burned-out light tubes the men have to crawl on their hands and knees on narrow catwalks with less headroom than a midget would require.

Most of the floors in the Museum are plain cement surfaces—a few special exhibition halls, corridors, and other areas are covered with heavy linoleum, and a few areas, like Stanley Field Hall, have marble floors. The cement floors total approximately nine acres. Most people find it surprising to learn that the cleaning of these is done by vacuum cleaner rather than by mops or scrubbing. The reason: it has been discovered that washing gradually breaks down the surface of cement floors until they begin to powder and become uneven, whereas vacuum-cleaning removes the dirt more effectively and imparts a smooth and saving finish to the cement. Among floor problems is that of chewing-gum. The fact that frequent scraping of floors is necessary to remove deposits of this sticky substance is a reproach to the habits of the public.

EVER-BUSY WORKSHOPS

In addition to the huge and never-ending tasks mentioned, the Division of Maintenance has adequate carpentry and machine shops in which many kinds of exhibition cases are built to special design as required. Here also are made many special items of equipment required in laboratories and workshops for the use of workers in taxidermy, plant reproduction, fossil articulation, and the restorative processes used on archaeological and ethnological material.

Countless other chores and details confront the maintenance and engineering crews and place heavy responsibilities on Superintendent Jim Shouba and Chief Engineer Bill Lake. And like the rest of us, I'll bet when they go home from work, Mrs. Shouba and Mrs. Lake greet them with: "Dear, there's something I'd like you to fix in the living room."

Albino Tribesmen in Africa

White Negroes (albinos) sometimes occur among African tribes. The albinism may be complete or piebald. The skin, however, is pinkish, not white. The Bakongo tribe required an albino or some hair from one before they would open a new branch of a secret society. Some tribes are reported to regard albinos as reincarnations of deceased chiefs; among others, albinos experience difficulty in attaining marriage because the women hold them in disfavor; among some, the usual tribal marks—incisions in the skin—are denied to albinos.

NEW EXHIBIT DEMONSTRATES THAT 'A MUSCLE IS A MACHINE'

By D. DWIGHT DAVIS
CURATOR OF VERTEBRATE ANATOMY

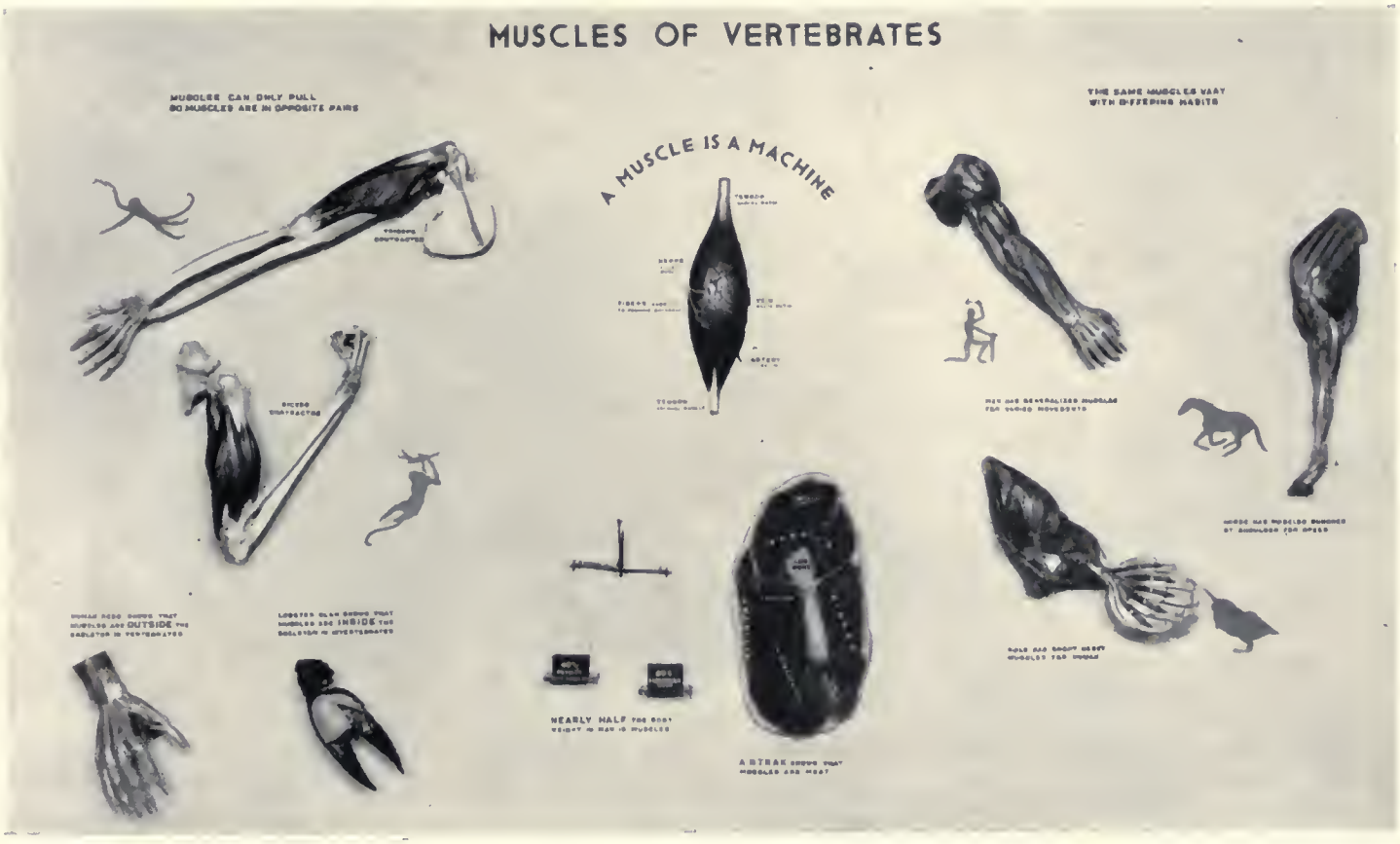
A new exhibit in the Hall of Vertebrate Anatomy (Hall 19) shows the structure of muscles and how they function in the body. Muscles are the anatomic mechanism that makes it possible for animals to move.

Muscles are machines. Like many man-made machines—an automobile engine, for example—they develop force that is translated into movement. Like an automobile engine they require fuel, which is piped to them by the arteries, and they produce waste products comparable to exhaust fumes, which are carried off by the veins. Like an automobile engine they must be sparked, and the nerves supplying a muscle are comparable to an ignition system.

The same muscles differ from one kind of animal to another, depending on the kind of work they are designed to do, just as the carburetor on an automobile engine is different from the carburetor on an airplane engine or the engine of a power mower. Models of the foreleg muscles of a horse, an animal designed for speed, and of a mole, designed for power, and model of a man's arm muscles, which are designed for skillful manipulations, illustrate this clearly.

The earliest ancestors of the vertebrates had no limbs and, of course, no limb muscles. Movements were only body movements, and the body muscles were large and powerful. During evolution the limb muscles became progressively larger and more important,and in mammals and birds they far outweigh the body muscles. This gradual shift in emphasis is evident in a series of models of the primitive limbless lancelet, shark, salamander, lizard, and mammal.

The exhibit is the first of a series proposed for Hall 19. It was prepared by Artist Joseph B. Krstolich under the direction of the writer. Some of the models were made several years ago by Miss Nellie Starkson.



MUSCLES—THEIR STRUCTURE AND HOW THEY FUNCTION

Part of a new exhibit illustratiog the mechanics of motion in various animals, including human beiogs. The models show specializations in types of muscles, such as those in the horse's legs designed for speed, those of the mole to provide power, or those in a man's arm adapted to skillful manipulations.

Nearly all muscles extend across one or more joints, and when the muscle fibers contract and shorten, the segments of the limb move, with the joints as the hinges. Everyone is familiar with the bunching and hardening of the biceps muscle when the arm is doubled up.

Nearly half the weight of the human body is muscles. Many people fail to focus on the fact that "muscles" and "meat" are the same thing and that meat animals like cattle and pigs are raised by man so he can eat their muscles. A beefsteak, with the individual muscles identified, is displayed in the new exhibit to make this clear. It has been suggested in view of current prices that the Museum is exhibiting the steak as a rare treasure, comparable to the crown jewels or a rare art object, but this is not true. (The Museum steak, incidentally, is a plastic reproduction—even more costly than actual meat at the butcher shop.)

Hunts Paleozoic Fishes

Dr. Robert H. Denison, Curator of Fossil Fishes, is seeking fish specimens of the Paleozoic era (about 500 million years ago) on an expedition for the Museum in fossil fields of Pennsylvania, New Jersey, and New Brunswick. Material is being sought to fill gaps both in the exhibits and the study collections of the Division of Paleontology. Curator Denison will be in the field for about six weeks.

Because of protection of the elephant by game laws, little ivory is now used by African tribes. However, some excellent old examples of ivory armlets and anklets are displayed in Hall E.

FREE CHILDREN'S MOVIES AUGUST 7 AND 14

The Raymond Foundation's summer series of free motion-picture programs for children, which began in July, will continue on two more Thursday mornings, August 7 and 14. Two performances of each program will be given, one at 10 A.M. and one at 11 A.M., in the James Simpson Theatre of the Museum. The Theatre and west entrance of the Museum will be open at 9:30 A.M. Following are the dates and titles of the shows:

August 7—LAND OF THE PUEBLOS
A color-film of New Mexican Indian pueblos, dances, and fiestas
Also a cartoon

August 14—ANIMAL FRIENDS
Possible companions during your summer vacation
Also a cartoon

Children are invited to come alone, accompanied by parents or other adults, or in groups from organizations. Leaders of groups are requested to seat their children together, to remain with them, and to maintain order during the programs. *Special note:* Although the films are selected for children, they are of interest to adults also and so grownups are welcome to attend.

STAFF NOTES

George I. Quimby, Curator of Exhibits in Anthropology, has returned to his post at the Museum. Curator Quimby has been on leave of absence since January to fulfill an engagement to teach archaeology and ethnology at the University of Oslo in Norway, under a Fulbright grant awarded to him by the U. S. Department of State. Under a second grant, from the Axel Wenner-Gren Foundation for Anthropological Research, he also made studies of European anthopological collections and museums . . . . **Dr. Rainer Zangerl,** Curator of Fossil Reptiles, has returned from Europe where his prime mission was the investigation of an alpine formation of Triassic age (about 190 million years old) in western Austria.

Museum Botanist Attends Symposium in Paris

An international symposium on "Evolution in Plants" was held at the Paris Museum of Natural History from May 15 to May 20 under the auspices of the French National Research Council. Dr. Theodor Just, Chief Curator of Botany at Chicago Natural History Museum, was one of two American speakers invited as guests of the French government.

After the symposium, Chief Curator Just visited various museums in Switzerland, western Germany, Sweden, Belgium, The Netherlands, and England to study their rich collections of fossil plants, particularly those of fossil cycads in the Department of Geology, British Museum (Natural History), London, and the Paleobotaniska Avdelningen, Naturhistoriska Riksmuseum, Stockholm. This part of the trip was supported by a grant from the National Academy of Sciences.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From the *Annual Report of the Director* for the year 1902:

"Attendance.—An increase in the attendance approximating 14,000, including 2,500 increase in paid admissions, during the year is the most gratifying evidence that could be given of the growing popularity of the Museum and its increasing interest and consequent usefulness. August 24 marked the fourth largest number of admissions in a single day, 11,000. The analysis of the attendance will be quite interesting. It shows a slight falling off in the attendance of school children and teachers on pay days, but this decrease was coincident with very inclement weather, in the absence of which the comparative attendance at other times shows that in this character of attendance the numbers would have been largely increased. There can be no doubt that the schools of Chicago and Cook County, the public schools as well as universities and colleges, are availing themselves more and more of the facilities of the Museum as teaching adjuncts to the books." [The total attendance in 1902 was 262,576; in 1951 it was 1,251,752.]

NEW MEMBERS

The following persons became Museum Members from June 16 to July 14:

Contributor
Miss Margaret B. Conover

Associate Member
Peter G. Torosian

Annual Members

S. R. Ballis, Maurice A. Barancik, Ben F. Bohac, John G. Bucuss, Jonathan Q. Caldwell, Keith S. Campbell, Freeman S. Church, Philip K. Crowe, Gustave B. Ehnborn, Louis Feinberg, Henry S. Fraerman, Alfred J. Kelley, Francis T. Kiley, Dr. Robert H. Koff, Alf Kolflat, William H. Leahy, Frank G. Marshall, F. L. Miller, DeForest Sackett, William W. Sims, Dr. Harold M. Spinka, Edward Sternberg, Henry A. Taendler, F. A. Tipple, Clarence P. Wagner, Frank R. Warton

GIFTS TO THE MUSEUM IN PAST MONTH

Following is a list of the principal gifts received during the past month:

Department of Botany:

From: Iowa State College, Ames—48 phanerogams, Missouri; State University of Iowa, Iowa City—825 phanerogams, Nicaragua and Mexico

Department of Geology:

From: St. Mary's Seminary, Techny, Ill.—57 fossil invertebrates, Canada and Austria

Department of Zoology:

From: George N. Avery, Marathon, Fla.—a seashell, Japan; Bernard Benesh, Burrville, Tenn.—20 insects, 2 myriapods, Tennessee; British Museum (Natural History), London—a horse skin and skeleton, Haiti; Dr. Durval T. de Lucena, Pernambuco, Brazil—a collection of fresh-water shells—Brazil; Fisheries Department, Sandakan, North Borneo—1,329 fishes, North Borneo; Lloyd G. Gage, Wilmette, Ill.—a collection of non-marine shells, Anglo-Egyptian Sudan; Dr. Fritz Haas, Chicago—a collection of fresh-water clams, Wisconsin; Harry Hoogstraal, Cairo, Egypt—282 mammals and 100 insects, Egypt and Anglo-Egyptian Sudan; Col. H. A. Johnson, Centralia, Wash.—a collection of shells, Washington; Dr. James Kezer, Columbia, Mo.—a cave fish, Missouri; T. Pain, London—a lot of fresh-water clams, North Ireland; Dr. Helmut Sick, Rio de Janeiro—a coral snake, Brazil; Fred N. White, Houston, Tex.—a snake, Texas

Technical Publications

The following technical publications were issued recently by Chicago Natural History Museum:

Fieldiana: Geology, Vol. 10, No. 13. *A Classification of the Conularida.* By G. Winston Sinclair. June 12, 1952. 11 pages. $ .20

Fieldiana: Geology, Vol. 10, No. 14. *Fauna of the Upper Vale and Choza: 6. Diplocaulus.* By Everett Claire Olson. June 27, 1952. 20 pages. $ .35

Fieldiana: Geology, Vol. 11, No. 6. *Early Devonian Fishes from Utah. Part I. Osteostraci.* By Robert H. Denison. June 16, 1952. 25 pages. $ .50

Fieldiana: Zoology, Vol. 34, No. 1. *References to the Tuatara in the Stephen Island Letter Book.* By Karl P. Schmidt. June 10, 1952. 10 pages. $ .20

Fieldiana: Zoology, Vol. 34, No. 2. *A New Leptodactylid Frog from Chile.* By Karl P. Schmidt. June 11, 1952. 5 pages. $ .10

Fieldiana: Zoology, Vol. 34, No. 3. *Notes on Birds from the Marcapata Valley, Cuzco, Peru.* By Melvin A. Traylor, Jr. June 11, 1952. 7 pages. $ .10

Fieldiana: Zoology, Vol. 34, No. 4. *The Surinam Coral Snake Micrurus surinamensis.* By Karl P. Schmidt. June 27, 1952. 10 pages. $ .20

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BULLETIN
Vol. 23, No. 9 - September 1952
Chicago Natural History Museum

BIRDS OF MEXICO

Special Exhibit of Water-Colors
by George M. Sutton
September 1–30

Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

Museum Members' Night October 10 . . .

A STAGE SHOW IN AMERICAN INDIAN COSTUMES: 'OPEN HOUSE,' AND A SPECIAL EXHIBIT

THE EVENING OF FRIDAY, OCTOBER 10, has been designated as Museum Members' Night. All Members of the institution and their guests are invited to attend "open house." Admission will be by presentation of membership card or the invitation that will be sent to Members at an early date.

Features of the evening will include a "fashion show" of American Indian costumes in the James Simpson Theatre; a special exhibit of two remarkable collections of Indian dolls; a preview of the first half of a newly reinstalled Hall of the Plains Indians (Hall 6); and visits to the workrooms, laboratories, and studios of the scientific and technical staff on the third and fourth floors of the Museum normally not open to the public.

"Open house" will begin at 7 P.M., but the exhibition areas of the Museum will be open at 6 P.M. For the accommodation of those who wish to come early and prefer to dine at the Museum rather than go home or to the Loop, the Museum Cafeteria will begin serving at 6 P.M.

The Theatre show will run from 8:30 to 9:30 o'clock. About thirty young women, garbed in the costumes of various tribes, will participate. The show will be staged by Eric Douglas, Curator of the Department of Native Arts at the Denver Museum of Art. This is an elaborate production that has received great acclaim in previous presentations at museums in other cities.

One of the most popular features of Members' Night last year was the opportunity to tour the studios, laboratories, and workshops of scientists, preparators, and technicians on the Museum's third and fourth floors. This feature will be repeated on this occasion and again the members of the staff in each department and division—chief curators, associate curators, assistant curators, taxidermists, artists, plant-reproduction specialists, and other assistants—will all be on hand to greet Members and to explain various phases of the work of preparing exhibits and conducting research. The Museum will remain open until 10:30 P.M.

HORNBILL WIVES WALLED INSIDE TREE-NESTS

BY AUSTIN L. RAND

CURATOR OF BIRDS

FOR A LONG TIME it has been written that the male hornbill walled up his mate in her nest in a hole in a tree at nesting time, and one author even wrote that the male plucked out the female's feathers then. Even though the facts underlying these statements have different interpretations, the life of the hornbill is still strange enough. Travelers and naturalists in Africa had brought back tantalizing bits of information to add piecemeal to our knowledge, summarized by R. E. Moreau, the noted naturalist.

First, we must not say "the hornbills," for there are Asiatic and Malayan species as well as African. Further, African species differ amongst themselves—notably the ground hornbill, which acts quite differently from the others.

It is quite true that in many African species the female is walled up in her nest and this period when she is enclosed may last three to four months. But it's not an imprisonment forced on her by the male, and presumably she could, if she wanted to, open the entrance at any time—as she does, finally, on emerging.

With the African hornbills the details vary with the species, but the nest is usually located in a hole in a tree and, except for the ground hornbill, the entrance is plastered up so that only a narrow slit is left, about wide enough for the passage of the bird's bill. The female takes an active part in the walling up of the opening and might be said to wall herself in. When the opening to be filled is wide, the male may bring earth, which he mixes in his gullet with saliva and presents to the female who does the actual plastering. In some species the walling up of the entrance may take months.

The female may wall herself in for some days before she lays her first egg. Throughout incubation she remains there. Depending on the species, she may peck her way out or burst out when the young are partly grown, or she may stay until the young are ready to fly.

During the time the female is walled in the male brings food for her, and later for the young also. That he is a good provider is indicated by the fatness of the female and her young. This is proverbial with the natives (who probably have a culinary viewpoint). The method of feeding varies with the species. The male may bring a bit of food in his bill, pass it in to the female, and then go for more. Other species, which we might think more intelligent, carry berries in their gullet, regurgitate them one by one, and pass them to the waiting female. These species make trips to the nest less frequently.

Apparently shortly after the female goes into the retirement of her walled-in nest, she quickly molts all her flight feathers so that she is flightless, and then she begins to grow them again. When the female bursts out of the nest, the young, only partly grown, replaster the hole using remains of food and rotten wood. Perhaps only half-way through their nestling period they thus wall themselves in. The female then helps the male care for the young.

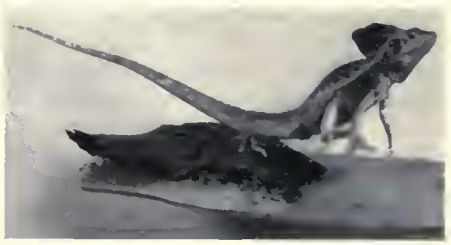
Such is an outline of what some of the African hornbills do at nesting time. This conduct is unique in the bird world. Details differ from species to species, and one species

appears not to wall up its nest. In an Asiatic species it is said that if the male is killed other hornbills help to feed the female in her retirement. It is an amazing behavior pattern and an improbable one in that it is difficult to find a functional explanation for its development.

SOME LIZARDS OF FOREST AND DESERT, AND HOW THEY LIVE

By KARL P. SCHMIDT
CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

THE FEW GROUPS of living reptiles that survived the great wave of extinction at the end of the Age of Reptiles about 70 million years ago include only the solitary New Zealand tuatara (a lizard-like reptile that proves to be no lizard), the twenty-odd species of crocodilians, about 200 turtles, and the closely related groups of lizards and snakes, which have held their own much better in the world of mammals and birds. There are about 2,500 kinds of snakes and some 3,000 species of lizards, mostly small. It is the lizards that seem to museum specialists to be the most typical reptiles, perhaps because most of them are four-limbed, while some become startling little analogues of the dinosaurs that ran on their hind legs when they (the lizards) do likewise. Actually, the crocodiles and alligators are more closely related to the dinosaurs than the lizards are.



WATER-WALKING LIZARD

The common basilisk of Central America, shown poised to run off on the surface of a stream. This species runs on its hind legs, on land as well as water.

In two new panels of lizards recently reinstalled and placed on display in Albert W. Harris Hall (Hall 18), the lizards are not arranged family by family according to relationship but by the type of surroundings —forest or desert—in which they live. This is the way we see them if we journey to the lizard metropolis of the American Southwest or to the forests and waterways of the tropics in Central America or the East Indies. The importance of this division according to environment lies in that it is of first importance to the lizards themselves, as is shown in their special adjustments for living in trees or on sand and rock.

THE POISONOUS GILA

The desert and dry plains panel shows some of the best-known lizards of the American Southwest. The Gila monster is boldly colored to go with its poison-secreting glands, and perhaps its clumsy form and deliberate locomotion are related also to the fact that it is a dangerous customer. Except for a close relative in western Mexico, it is the only poisonous lizard in the world.

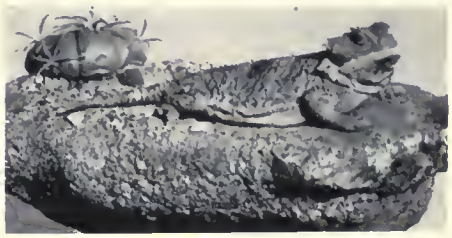
Wherever there is rocky desert there are lizards that live in the crevices of rock and wedge themselves in by inflating their lungs, so that their scaly bodies are not at all easily extracted. The chuckwalla represents this type in our Sonoran desert. This remarkable protective habit is often reinforced by a spiny tail, sometimes an extremely spiny one, like that of the Egyptian mastigure, which whips any hungry desert fox on his sensitive nose if he tries to pull the lizard out. Spininess seems to go with desert lizards in general and is found in various parts of the world—in the Moloch lizard of Australia (shown on the screen), in lizards of South Africa and Central Asia, and in our own dry regions by the "horned lizards," which is the book name for what are everywhere known as horned toads.

Three different kinds of horned toads are shown. Several groups of lizards have become legless and snakelike, and one of these, the Californian limbless lizard, is included in the exhibit. Of the American rock-lizards, by far the most familiar is the collared lizard, which is gaily colored and calls attention to itself by sitting up conspicuously on a rock.

LARGEST OF LIZARDS

Among the forest dwellers, the common East Indian monitor represents the family with the largest of living lizards. This group includes the Komodo dragon, shown in a separate case in the hall. The common monitor supplies most of the ornamental leather used for women's handbags and shoes. One of the larger South American lizards (still represented by a stuffed skin, one of the very few such specimens still extant in the Museum) is the tegu, whose scales are remarkably like those of the monitor.

An especially interesting model shows the Central American basilisk, one of the American lizards that habitually runs on its hind legs when it gets up speed. It can even dash over the surface of the water on a pond or stream and does so in a V-shaped spray of water. The traction that enables it to do this is supplied by fringes along its long hind toes. Our model was made from a lizard caught and posed for its mold by Staff Taxidermist Leon L. Walters in British Honduras nearly thirty years ago, when he and I were on our first expedition for the Museum. An especially fine model shows the Australian water dragon, which is familiar as one of the lizards that lives well in captivity and is commonly to be seen in Chicago's zoos.



DESERT SHORT-HORN

Only it's a short-horned horned toad, one of the lizards with a flattened body that are characteristic of arid regions in the southwestern United States.

ADHESION AIDS CLIMBING

Among the most characteristic of forest lizards are those that climb by means of adhesive pads on their fingers or by a combination of claws and pads. Such lizards are familiar in the little green anolis of the southeastern United States (not shown in the new screen) and in the gecko family. Geckos appear on both desert and forest screens in the new case. There are vastly more different types of forest geckos, though there are perhaps more *species* of the fewer desert types.

The new models are in cellulose acetate, made in the Museum's preparation laboratory by Walters and a fellow taxidermist, Ronald J. Lambert. The models are shown on natural bases, many of which are actual ground and vegetation taken up by infiltrating it with thin cellulose acetate solution. The case is provided with map labels and with photographs to show different types of forest habitat in Central America.

THIS MONTH'S COVER

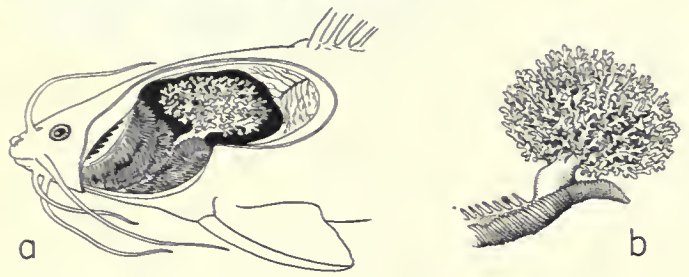
The birds on the cover are Mexican trogons, colorful members of a notably colorful family that includes such exotic species as the quetzal, national bird of Guatemala (exhibited in Hall 20). Trogons occur commonly in the tropical regions of both hemispheres and are best represented in lowland forests. They usually nest in cavities excavated in soft tree-trunks or in termite nests and feed principally on fruit. The species shown frequents oak and pine forests at high altitudes. It is among the native birds most likely to be seen in the mountains of Mexico and Guatemala. Our picture reproduces one of about fifty paintings of brilliantly plumaged Mexican birds by George M. Sutton that will form a special exhibit in Stanley Field Hall throughout September **(see page 7).**

Books on natural-history subjects, popular in style but scientifically authentic, are sold in THE BOOK SHOP of the Museum.

WALKING FISHES OF SOUTHEASTERN ASIA TRAVEL ON LAND

By ROBERT F. INGER
ASSISTANT CURATOR OF FISHES

WE GROW ACCUSTOMED to the phenomena of nature and frequently make unconscious generalizations about them. We become aware of this mental process only when surprised by an observation that does not fit these concepts. For example, the word "fish" invariably conjures up an animal that lives in water and dies if on land—an animal that moves gracefully in water but merely flops about erratically on land. When we learn that some fishes regularly leave their aquatic environment and crawl about on dry land, we raise an eyebrow; when we learn further that certain of these fishes drown, literally, if forced to remain under water, we are certain that something is amiss.



Illustrations by Margaret G. Bradbury

Fig. 1. The catfish, Clarias batrachus. (a) Cut-away side view of the head showing the accessory respiratory structures (one-half adult size). (b) The accessory breathing organ (life size).

Considering what we have learned since Darwin developed and began the documentation of the theory of evolution, it should not be astounding that a few fishes behave so unexpectedly. Land vertebrates arose from fishes; the fossil record is clear on that score. Somewhere along the line the fish-like ancestor of all the amphibians, reptiles, birds, and mammals had to leave the water. So we know that fishes "walked" in the distant geologic past.

ADJUSTMENT TO LAND LIFE

The fact that some fishes habitually crawl out of their aquatic habitat and move about on land indicates many interesting biological problems and processes. Can we find, for instance, explanations for this strange behavior? What biological need is so served? It is generally considered that the ancient lobe-finned fishes that gave rise to terrestrial vertebrates were obliged to crawl overland from one waterhole to another in search of water as droughts dried up successive habitats. Observation indicates that this is a partial explanation of the behavior of only some of the modern walking fishes.

What about breathing? Evidently the gills of the vast majority of fishes are incapable of extracting oxygen from the air although they carry out that function adequately in water. How do the walking fishes breathe? In water most fishes move gracefully and seemingly with little effort by moving the tail from side to side. How is locomotion managed on land?

Curiously, southeastern Asia has a number of fishes that crawl onto land. They belong to such unrelated groups as the catfishes, labyrinth fishes, gobies, blennies, and synbranchid eels. Among the fresh-water species the catfish, *Clarias batrachus* (*Fig. 1*), and the climbing perch, *Anabas testudineus* (one of the labyrinth fishes) (*Fig. 2*), are well known for their abilities to travel over land. Dr. Hugh M. Smith, for many years a resident ichthyologist in Thailand, was able to observe the terrestrial movements of both of these species. Although he was unable to determine the maximum distance traveled or the maximum speed achieved, Dr. Smith did record a distance of 150 feet for an individual *Clarias* and 300 feet for an *Anabas*. The latter covered the 300 feet in 30 minutes.

Dr. Smith also reports that fishes of these species are commonly displayed alive on stone slabs in the markets of Thailand. Occasionally the merchant may sprinkle some water over them. If they are not sold, they are put in jars with a little water and offered for sale again the following day—still alive and fresh. Ichthyologists have kept *Anabas* out of water for twenty-four hours without any apparent damage to the fishes.

Both *Anabas* and *Clarias* inhabit rivers, lakes, ditches, ponds, and swamps. In southeastern Asia two factors frequently cause these habitats, with the exception of the larger rivers, to be deprived of most of their dissolved oxygen, without which very few animals can survive. First of all, the sun may raise the temperature of the water to over 90 degrees, which drives out the oxygen. Secondly, decomposition of organic material so abundant in these bodies of water removes great amounts of oxygen. Natural selection, in the case of the inhabitants of these oxygen-poor waters, has put a premium on the ability to extract oxygen from the atmosphere. It is not surprising that many fishes living in such places, primarily the relatives of *Anabas* and *Clarias*, do breathe air.

Much of southeastern Asia has a "monsoon" climate where rainfall is high but limited to a few months of the year. During the dry season, swamps, ponds, and even lakes dry up. Obviously fishes must have some means of avoiding the annual severe drought. Many burrow deep into the muddy bottom and pass through the dry season in a quiescent state. A few, like *Clarias* and *Anabas*, are able to leave a shrinking pond or ditch and move overland to another body of water. Note that this behavior is identical to that presumed for the fish ancestors of terrestrial vertebrates.

But the drying up of the habitat may not be the only stimulus for the terrestrial wanderings of *Anabas* and *Clarias*, for they are often found on land during the rainy season. It has been suggested that these fishes are hunting food. Several African relatives of *Clarias* have been observed eating grain in fields surrounding ponds.

MUD-SKIPPERS

Along the swampy estuaries and coasts of southeastern Asia the periophthalmid gobies, or mud-skippers (*Periophthalmus*), are one of the conspicuous features of the landscape. These small (less than 8 inches long) slender fishes (*Fig. 3*) with protruding eyes are present in unbelievable numbers, hopping or crawling over the mud flats or resting on the stilt-like prop-roots of mangrove trees. At the first sign of danger they flip themselves rapidly toward the water. But instead of seeking refuge in the water by diving, the "unfish"-like *Periophthalmus* skitters over the surface of the water, like a flat stone thrown by a boy, and returns to the shore out of reach of whatever threatened it. Precise speed determinations are not available, but my own experience has been that it is practically impossible to run one down on land.

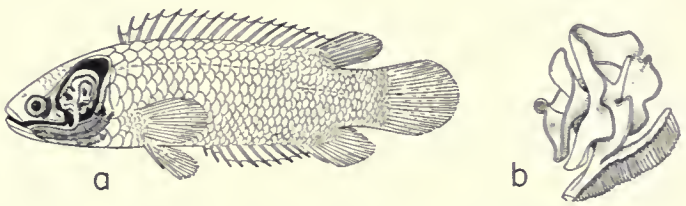


Fig. 2. The climbing perch, Anabas testudineus. (a) Cut-away side view showing the accessory breathing structures (one-third adult size). (b) The "labyrinth" or accessory breathing organ (twice life size).

Unlike *Clarias* and *Anabas*, the mud-skipper spends most of its time out of water, returning periodically to moisten itself. Its habitat differs from that of the catfish and climbing perch in that the oxygen content of the mouths of rivers is rarely depleted. Of course, in the most shallow water near shore, the temperature undoubtedly is high and, consequently, oxygen content low. But

oxygenated water is close at hand farther from shore. Presumably the ancestor of *Periophthalmus* might have obtained oxygen merely by swimming a few feet. Deoxygenation of the water, therefore, does not seem to be a stimulus for the terrestrial habits of the mud-skipper. Since the estuaries are flooded daily by the tides, the habitat never dries up. Drought and the search for water must also be eliminated as explanations.

The food habits of *Periophthalmus* hold the key. The mud flats on which it lives abound with small crabs, snails, and insects that form the bulk of the mud-skipper's diet. It is a common sight to see one of these fishes make a short dash (on land) and grab a tiny crab.

The ability to breathe atmospheric oxygen is one of the most remarkable adaptations of the walking fishes. The respiratory apparatus of *Clarias* consists of the usual four pairs of gills provided with long gill filaments found in the majority of fishes including the catfishes. Exchange of oxygen and carbon-dioxide, the basic process of breathing, takes place through the gill filaments. In addition to gills, *Clarias* and its relatives have, on each side of the gill chamber, an opening leading into a pouch at the rear of the head (*Fig. 1a*). Each of these pouches contains a so-called "dendritic" or branching tree-like structure (*Fig. 1b*) that is richly supplied with blood and functions as an accessory respiratory organ.

Anabas and its air-breathing relatives also have accessory respiratory structures in addition to the four pairs of gills. As in the case of *Clarias* there is a large pouch on each side of the head in which is located the accessory respiratory organ (*Fig. 2a*). But this organ consists of a series of thin sheets supplied with many small blood vessels (*Fig. 2b*). This respiratory structure is called a labyrinth organ and gives its name to an entire group of fishes (Order Labyrinthici).

Compared to its thoroughly aquatic relatives, *Periophthalmus* has a reduced gill apparatus. Four pairs of gills bearing filaments are present, but the total surface area of the gills is small relative to the total surface area of the body. The reduction in "aquatic" respiratory surface is more than compensated by the development of accessory respiratory surfaces. The floor and roof of the mouth and the walls of the gill chamber are provided with networks of blood capillaries. Exchange of gases takes place through these vascularized tissues, which are absent in the aquatic members of the family.

In their usual habitats both *Anabas* and *Clarias* rise to the surface at irregular intervals (every one to fifteen minutes) and gulp air, which is stored in the accessory pouches and expelled later through the gill openings. Experiments conducted to test the dependence of these fishes upon aerial respiration indicate that *Anabas* and its relatives die in one to seven hours if prevented from rising to the surface in water that contains enough oxygen to support non-airbreathing fishes. Thus the labyrinth fishes actually drown if they cannot gulp air. The evidence now available is that *Clarias* and *Periophthalmus* can live without access to the atmosphere if the water is well oxygenated; otherwise they, too, succumb in a short time. In its oxygen-poor habitat, therefore, *Clarias* probably cannot survive without atmospheric oxygen.

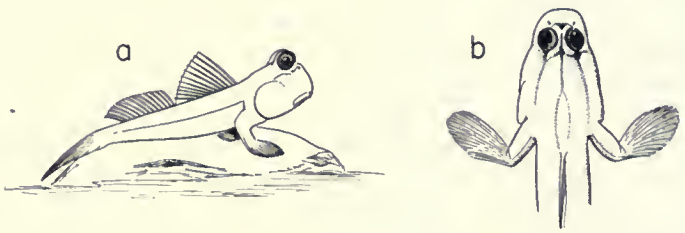


Fig. 3. The mud-skipper, Periophthalmus. (a) Resting position out of water (about one-quarter adult size). (b) Top view (note the fleshy fin bases and the elbow-like bend in the fin).

HOW FISHES WALK

The walking fishes have been faced with the same locomotor problems that the earliest land vertebrates had. The density of water is such that aquatic animals need little energy to lift themselves off the bottom. The thin atmosphere, however, does not provide such buoyancy, and land animals must develop means of raising their bodies off the substrate or expend a great deal of energy counteracting the friction of a body dragged over the ground. Maintenance of a posture and equilibrium are also easier in the denser medium of water, and only slight movements of the paired fins will suffice. On the other hand land movement over uneven surfaces requires frequent shifting of the entire weight with consequent expenditure of considerable energy.

How are these problems solved by contemporary walking fishes? The truth is that some of them are not solved. Terrestrial locomotion of both *Anabas* and *Clarias* is accomplished by rapid lateral undulations of the body, the tail pushing against the ground. This is precisely the manner in which *Anabas*, *Clarias*, and the great majority of fishes swim forward. But on land this motion, similar to that of snakes, also means that friction must be overcome. For *Anabas* and *Clarias* the expenditure of energy is the only solution. In the case of *Anabas* this rather inefficient mode of progression is probably aided by the rough scales that overlap to the rear and catch on any unevenness of the ground, thus preventing the fish from sliding backwards.

Anabas has the additional problem of maintaining its equilibrium. Its deep and compressed body would tend to topple over if it were not for the paired ventral fins. These fins, provided with a stout spine, are held out from the side and serve as props. The pectoral fins may also aid in equilibrium, but, being relatively high up the side, are probably less effective. To the low-slung *Clarias*, equilibrium would not seem to be a problem. Yet it, too, holds paired fins at right angles to the body. In this case the pectorals, which are low on the side and equipped with a stout spine, are used. It is likely that the ventrals of *Anabas* and the pectorals of *Clarias* help prevent backward movement. As yet no one has made the relatively simple observations necessary to determine the role of the paired fins in propulsion.

Periophthalmus has developed a far more effective mode of terrestrial locomotion. Starting from a resting position on land, the pectoral fins are raised, moved forward, and set on the ground. The front two-thirds of the body is then raised off the ground and pushed forward, the pectorals acting as crutches. At the end of the cycle the pectorals are back along the sides. By repetition the body is hitched over the ground at a moderate speed. The ventral fins are operated in the same manner as the pectorals but, because of their shorter length and mechanically less efficient position, they do not propel the body as readily. The tail is merely dragged along (*Fig. 3a*).

The movement just described we might call "cruising" speed. Maximum speed is attained by a rapid cycle of bending and straightening the body. Forward propulsion is given by the tail, which thrusts against the ground. This motion actually lifts the entire fish off the ground and is also used in skipping over the surface of water.

The pectoral fins of *Periophthalmus* are clearly vital organs of terrestrial locomotion. These fins have a thick, fleshy base followed by a definite kink reminiscent of an elbow (*Fig. 3b*). Thus a straight membranous fish-fin originally used for equilibrium has been modified into an effective walking or crawling limb.

Several general biological principles are evident in this account. In the course of evolution the function of structures is subject to alteration. For example, the pectoral fin—originally an organ of equilibrium—has been modified in *Periophthalmus* so that it now propels the fish. Secondly, adaptations to one set of circumstances sometimes enable animals to exploit another set; this is one of the types of pre-adaptation. The solution of the problem of respiration in their oxygen-deficient aquatic habitats in the form of new aerial respiratory organs enabled *Anabas*

(*Continued on page 7, column 1*)

AN ANCIENT TRADE ROUTE OF INDIANS TRACED

By THOMAS P. ALDER
MEMBER OF SOUTHWEST ARCHAEOLOGICAL EXPEDITION

WHAT WAS ONCE an important communication route for Indians of the Southwest is now a desolate and almost inaccessible river valley that poses difficulties for members of the Museum's Southwest Archaeological Expedition who seek to learn more about the prehistoric Indians of the area. This year's expedition is the Museum's eighteenth. The current operation is the ninth season of excavating ruins in this part of New Mexico.

PART OF SOUTHWEST EXPEDITION'S 1952 'DIG'

Over-all view of Cosper Cave, near Reserve, New Mexico, showing two entrances, and the Blue River below, looking east northeast. Here the party of archaeologists and assistants, working under the direction of Dr. Paul S. Martin, Chief Curator of Anthropology, is making some of the most important excavations of the current season.

By uncovering remains of the Mogollon civilization (about 850 B.C. to A.D. 1250), Dr. Paul S. Martin, Chief Curator of Anthropology and leader of the expedition, and his associates hope to reconstruct the extinct culture and relate it to contemporary cultures. A cave dwelling, thirty-three mountainous miles and two driving hours from the camp near Reserve, New Mexico, was chosen as the site for this season's excavation because its remote location was insurance against the effects of over-zealous amateur diggers.

Although the site is difficult of access today even with modern automobiles, excavations have unearthed evidence indicating that the area was heavily traveled about 1,000 years ago. Indians from as far as 125 miles to the north, south, and west apparently traded along the river that flows below the cave. What they brought has remained, until now, beneath the cave soil. From this material the archaeologists draw evidence to reconstruct as far as possible the story of the Mogollon Indians who lived there.

In this particular cave dwelling, finding pottery fragments of the type used by contemporary but distant civilizations led to the belief that the valley was a trade route. This conclusion is an additional piece in the unfinished puzzle of prehistoric Mogollon civilization. To arrive at such a conclusion, archaeologists must relate the inert, speechless objects they find to those that they themselves have previously found and to those found by others. By interrelating object with object, conjecture with conclusion, the archaeologist hopes ultimately to have enough of the right pieces in enough of the right places. Then we will have an understandable picture of these people who are now known to us only by fragmentary remains of some of their works.

Change in Visiting Hours

On September 2, the day after Labor Day, autumn visiting hours, 9 A.M. to 5 P.M., go into effect at the Museum, continuing until October 31.

The extensive research collections of the Museum may be examined by qualified students, specialists, and Members of the Museum upon application to the Director.

Museum Appraisal by an 'Expert'

Allan Sillyphant, Director of the Glendale (California) Museum of Arts and Sciences was a recent guest of Chicago Natural History Museum. John R. Millar, Deputy Director, was host on a tour of the building.

Reflecting natural pride in his California institution, Director Sillyphant said: "We are making great progress in exhibition techniques in Glendale—but Chicago Natural History Museum is good, too."

Director Sillyphant is 11 years old. The Glendale museum is supported and operated by some 40 boys. They have assembled their museum, which is housed in a four-car garage, by pooling their personal collections and constantly seeking additions. The Glendale museum now has about 7,000 specimens relating to natural science, the arts, and American history.

Paleozoic Fishes Received

Dr. Robert H. Denison, Curator of Fossil Fishes, has returned from the maritime provinces of Canada with collections of fossil fishes from a number of localities. This work was a continuation of his research on the Silurian and Devonian vertebrates that lived about 350 million years ago.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From the *Annual Report of the Director* for the year 1902:

"*Expeditions and Field Work.*—In the interests of the Department of Geology, Assistant Curator [Henry W.] Nichols, during the months of October and November, made an extended trip through the mining districts of the southern Appalachians, principally in the mountainous parts of North Carolina and Georgia. The well-known copper mines of Ducktown, Tennessee, were visited, and a full series of the copper ores, rocks, and accessory minerals there occurring were collected. . . . Some fossils were obtained in southern Tennessee and Mississippi. In all, the expedition yielded six hundred and eighty-two (682) specimens of minerals, one hundred and thirty-two (132) specimens of ores and associated rocks, twelve (12) specimens of fossils, and twelve (12) miscellaneous geological specimens. A deposit of Permian batrachian fossils in Oklahoma was investigated by Mr. [H. William] Menke in November, with a view to determining its richness in Museum material. Some fragmentary specimens of scientific importance were secured, but the investigation showed that material for exhibition purposes was not likely to be afforded by the locality."

MEXICO'S COLORFUL BIRDS IN WATER-COLORS

George M. Sutton, one of America's best bird artists, will have a one-man show of some fifty water-colors of Mexico's birds in a special exhibit at Chicago Natural History Museum from September 1 to 30, inclusive.

Among the birds represented are guans, hawks, doves, cuckoos, trogons, motmots, woodpeckers, woodcreepers, warblers, and tanagers. Chicago bird watchers who have visited Mexico or who may plan to do so in the future will find among these pictures many subjects of special interest. All of the birds are represented by specimens in the Museum, either in the exhibits or the research collections. Most are essentially tropical species, but several occur commonly in our western states.

The paintings are large in size (22" x 28"), giving sufficient scope for detailed studies. The birds themselves are depicted in life size. (While the exhibit is here, lithographed reproductions of some of the paintings will be on sale in THE BOOK SHOP of the Museum.)

The paintings were made by Dr. Sutton during repeated journeys in Mexico, beginning in 1935. Sutton is noted for his skill in reproducing the natural colors of the birds, many of them extreme in brilliance, and for his faithful portrayal of the subjects from the standpoints of anatomical accuracy and naturalness in posture. His work is marked further by freshness and sympathetic treatment, so that the paintings are outstanding artistically as well as from the viewpoint of soundness of their natural history.

Dr. Sutton occupies a unique position among bird artists. Ornithologists are generally agreed that he has few peers in bird portraiture. In addition, his talents have enabled him to achieve eminence as an author and research scientist and as a field naturalist. His familiarity with and genuine love for wild birds are reflected in his work.

Dr. Sutton developed his exceptional talents for painting while studying at Cornell University with the late Louis Agassiz Fuertes, held by many to have been the greatest of American bird artists. (Fuertes accompanied the *Chicago Daily News* Abyssinian Expedition of the Museum in 1926–27 as staff artist, and the Museum possesses a valuable collection of his paintings of Ethiopian birds.)

Dr. Sutton began his ornithological career as assistant curator of birds at the Carnegie Museum in Pittsburgh. There he became interested in the Arctic, and spent the winter of 1929–30 on Southampton Island in Hudson Bay. His voluminous technical reports on this experience are abbreviated for the general public in the vividly written *Eskimo Year*. In 1932 he again became associated with Cornell University, and more recently with the University of Michigan. He has moved from Ann Arbor to Norman, Oklahoma, where he will begin teaching ornithology this autumn at the University of Oklahoma. He is a founder of the Neotropical Research Foundation and the author as well as illustrator of a number of books on ornithology and exploration. In addition, he has illustrated the works of many other writers.

MEXICAN POTOO

A relative of our nighthawk and whippoorwill. One of the water-colors by George M. Sutton to be seen in special exhibit during September.

WALKING FISHES—

(*Continued from page 5*)

and *Clarias* to exploit a different environment. Thirdly, the peculiar requirements of a given environment often result in similar, though not identical, adaptations in unrelated animals. Convergence, as this phenomenon is called, is evident in the accessory respiratory apparatus independently evolved in *Anabas* and *Clarias*. Finally, different ecological problems may have similar solutions. Thus the search for water, by *Anabas* and *Clarias*, and the search for food by *Periophthalmus*, have both led to terrestrial habits.

Newspaper Assigns Correspondent To Museum Expedition

The *Chicago Sun-Times* last month assigned Robert Northshield, staff feature writer, to cover from the field the operations of the Museum's Southwest Archaeological Expedition near Reserve, New Mexico. Mr. Northshield arrived at the height of the season's work and was the guest in camp of Dr. Paul S. Martin, Chief Curator of Anthropology and leader of the expedition. Publication of a series of vivid accounts resulted from Mr. Northshield's observations.

MAMMALS OF GUATEMALA BROUGHT TO MUSEUM

When the animals of the Western Hemisphere spread out over the vast masses of the North and South American continents, adaptation to the varied environments produced a great diversification of species. Much of zoological research is devoted to studies of speciation and distribution because knowledge of this sort contributes to our understanding of evolution.

Luis de la Torre's study of the mammals of Guatemala will be a contribution of this kind. Since 1948, Mr. de la Torre has made three trips to Guatemala at different seasons of the year to collect specimens of small mammals on Museum expeditions. He has just returned to the Museum from his most recent trip, bringing this time approximately 600 specimens, mostly rodents. It is important to obtain many specimens of each species for proper identification of the species, and for the same reason it is important to catch the creatures at different seasons of the year. Just as a weasel becomes an ermine in the winter, so the animals of Guatemala change appearance from dry season to wet season.

Mr. de la Torre collected in the southeastern part of Guatemala, bordering on Honduras and El Salvador, where the great continental belt of mountains lowers briefly, to tower up again farther south. This zoologically little-known area is a cross-section of a great variety of terrain, with mountains, wet lowlands, and desert areas. Further, Guatemala is a segment of the bridge between the two American continents, so that the animal life consists of representatives of the fauna of both, together with some unique Guatemalan variations.

For his study, Mr. de la Torre chose the small mammals, especially mice, because these do less cross-country meandering than larger mammals, such as the various cats and the coyote. Speciation caused by isolation is more apt to occur among the stay-at-homes.

Economic Geology Field Trip

During September, Robert K. Wyant Curator of Economic Geology, will collect ore specimens and related rocks in the mining districts of central Utah and eastern Nevada. Particular attention will be given to the lead and zinc ores of the Tintic district in Utah.

The search for new ore bodies has led to the study of the degree of physical and chemical alteration of the rocks adjacent to the known ore bodies. It is planned to make a collection of these rocks and ores to be used in future exhibits in the Hall of Economic Geology. In addition, ores of tungsten, fluorite, and silver from other mining districts will be added to the growing Museum collection.

Two Series Open October 4 . . .

OFFER SATURDAY PROGRAMS FOR ADULTS, CHILDREN

The Museum's annual Autumn Course of free illustrated lectures for adults on Saturday afternoons and the free motion-picture programs for children on Saturday mornings will begin on October 4 and continue on the nine Saturdays throughout October and November. Both series will be presented in the James Simpson Theatre of the Museum. The children's programs are under the auspices of the James Nelson and Anna Louise Raymond Foundation.

Lectures for Adults

The lectures for adults, on a wide variety of subjects in the fields of travel, exploration, and science, begin at 2:30 P.M. The first, on October 4, is "Newfoundland," illustrated with natural-color motion pictures. Dick Bird, of Regina, Saskatchewan, Canada, is the lecturer. His film and talk will present fascinating studies of the interesting fauna and flora of Britain's oldest colony, which has recently become Canada's newest province. A schedule of the eight other lectures will appear in the October issue of the BULLETIN.

No tickets are necessary for admission to these lectures. A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats. Requests for these seats should be made in advance by telephone (WAbash 2-9410) or in writing, and seats will be held in the Member's name until 2:25 o'clock on the lecture day.

Movies for Children

The free motion-picture programs for children will be given at 10:30 A.M. No tickets are required. Children may come alone or in groups, either with or without adults. If the Theatre seating capacity is exhausted, adults may be asked to surrender their seats to children. A complete list of the titles of films to be shown will be printed in the next BULLETIN. The first program, on October 4, will feature "The Story of the Jungle."

HASTENS BACK TO FIELD OF 3-YEAR RESEARCH

Zoologist Harry Hoogstraal is again on the assignment that has taken him to geographical and zoological realms that few people ever see. For three years he has been studying ticks and tick-borne diseases as head of the medical zoology department of United States Naval Medical Research Unit No. 3 with headquarters at Cairo, Egypt, in an effort to gain control over serious diseases occurring in that part of the world. Last month he returned to this country for a brief visit during which he conferred with colleagues in the Department of Zoology at the Museum.

Mr. Hoogstraal is connected with the Museum as a Field Associate in zoology. His research has enabled him to make valuable studies and collections of creatures from various parts of Africa, Madagascar, and Yemen. These collections are mainly of small mammals, reptiles, insects, and a few birds and fishes—those having a connection with the transmission of tropical diseases. Included are rare desert rodents that are represented in the world's museums by only three or four specimens. He acquired a specimen of the rare Innes cobra, a three-foot-long burrowing snake with tiny eyes, that lacks the hood characteristic of other cobras. There are fewer than ten of these cobras in all the museums of the world.

Two of the more important diseases Mr. Hoogstraal is studying are Q-fever and relapsing fever. Q-fever is similar to the worst types of malaria; formerly unknown in Egypt, it is now widespread. It has been traced largely to dairy animals, which appear to have been infected with it by wild carriers such as desert rodents and ticks.

His project has carried him into some extraordinary experiences. In Yemen, Mr. Hoogstraal and his associates were guests of the king and his court.

On his recent visit to this country Mr. Hoogstraal studied at the Museum and attended a conference at the Rocky Mountain Spotted Fever Laboratory at Hamilton, Montana. He has already left for Cairo to resume his work there.

Daily Guide-Lectures

Free guide-lecture tours are offered at 2 P.M. daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

There will be no tour on Monday, September 1, because of the Labor Day holiday. The Museum will be open, however, from 9 A.M. to 6 P.M.

Museum Ethnologist Honored

Dr. Alexander Spoehr, Curator of Oceanic Ethnology, has been appointed a member of the National Research Council's Pacific Committee on Anthropological Sciences. As a consultant to the Pacific Science Board, Curator Spoehr attended a conference on Micronesian and Hawaiian archaeology at Honolulu in August.

The royal azalea (Rhododendron Schlippenbachii) is a native azalea of Korea. It is one of the earliest to bloom and has large spatulate-obovate leaves and large pale rose-pink flowers.

GIFTS TO THE MUSEUM IN PAST MONTH

Following is a list of the principal gifts received during the past month:

Department of Geology:

From: On behalf of August G. Becker (*deceased*) (presented by Raymond B. Becker), Gainesville, Fla.—a cranium of musk-ox, Iowa; Jon S. Whitfield, Evanston, Ill.—73 fossil plants, Tennessee; Dr. and Mrs. Robert H. Whitfield, Evanston, Ill.—170 fossil plants, 3 fossil invertebrates, Illinois; Edward W. Wilke, Chicago—a specimen of granite showing differential weathering by frost action

Department of Zoology:

From: George N. Avery, Marathon, Fla.—a collection demonstrating animal associations, American seas; Bernard Benesh, Burrville, Tenn.—191 pinned insects, chiefly flies and wasps, Tennessee; Dr. Argentino A. Bonetto, Santa Fe, Argentina—a collection of 12 lots of fresh-water clams, Argentina; Chicago Zoological Society, Brookfield, Ill.—19 birds; Harry Hoogstraal, Cairo, Egypt—411 frogs, 271 lizards, 39 snakes, 4 turtles, Madagascar; David Kistner, Chicago—37 beetles, Europe; Dr. Boonsong Lekagul, Siam—19 bat specimens, Siam; Dr. Robert Rausch, Alaska—a bat, Alaska; Dr. Helmut Sick, Rio de Janeiro, Brazil—a collection of shells, Brazil; Alan Solem, Oak Park, Ill.—a collection of North American shells and many pamphlets

Library:

From: Bruce Publishing Co., Milwaukee; Dr. Donovan S. Correll, Washington, D.C.; Museum of Comparative Zoology, Harvard College, Cambridge, Mass.

NEW MEMBERS

The following persons became Museum Members from July 15 to August 14:

Life Member

John G. Searle

Non-Resident Life Member

Thomas C. Desmond

Associate Members

Dr. Erwin F. Geldmeier, Miss Elizabeth Hoffman, Kenneth Kroehler

Sustaining Member

Dr. Donald C. Lamons

Annual Members

George Echt, Donald R. Eck, Dr. Alfred B. Falk, Arthur C. Farlow, H. Folger Fellowes, Dr. Frank T. Grill, B. A. Guettler, Richard E. Gutstadt, H. B. Herring, Charles F. Hough, Robert S. Ingersoll, William G. Karnes, Robert J. Koretz, Dr. Stanley R. Korf, A. E. Kuta, Daniel J. Lamont, Joseph D. Lohman, Robert E. Potter, Philip G. Reed, John F. Sembower, Dr. Jack H. Sloan, Dr. LeRoy H. Sloan, Glen L. Sponsler, Henry C. Stirn, Mrs. David H. Wagner, Lawrence C. Walgren, C. E. Waltman, Mrs. Tony Weitzel, Sidney Wells, Schuyler Yates

Gift suggestion: a Museum membership

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Chicago Natural History Museum

MUSEUM MEMBERS' NIGHT
Friday, October 10

Chicago Natural History Museum

FOUNDED BY MARSHALL FIELD, 1893

Roosevelt Road and Lake Shore Drive, Chicago 5

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Members are requested to inform the Museum promptly of changes of address.

THE TWO-HEADED CALF AND THE ALBINO ROBIN

The accumulation of oddities and freaks is one of the first responses to the collecting instinct and one that has filled many a mantel shelf, and, in the end, many museums. The general public is still likely to think that an albino robin or a two-headed snake must have great value to a museum. Such specimens are indeed interesting, but their interest is a limited one, and after the second specimen has been received, the museum's interest drops rapidly to zero and presently, it must be added, to less than zero.

The mission of a science museum is twofold. It presents the common and familiar to its visitors in such a way as to show what is meaningful or otherwise important in ordinary things. On the other hand it brings the strange and exotic to its halls, since these are not only of intrinsic interest but may throw light on the familiar. What is exotic to us may be, of course, the familiar on another continent.

Albinos are freaks of heredity, produced by a mutation in the normal complex that controls inheritance or, of course much more commonly, by the inheritance of the mutation after it has taken place. This inheritance is of the simplest Mendelian type, the character of albinism being "recessive," so that from the mating of albino and normal non-albino, albinism is visible in one-fourth of the offspring, one-fourth becomes free of the character, and in two-fourths, albinism is *recessive*, i.e., present in the hereditary mechanism but not developed. This mode of inheritance, the number of albinos per hundred thousand, and the fact that albinism is possible in *every* kind of animal in which pigment is developed at all, are the things of interest. It is already known that there may be an albino robin or an albino earthworm.

A recently published account of a fictitious albino bat contains a likewise fictitious interview between the author of the story and a museum curator, in which the curator is made to say that an albino bat would be of extreme interest to the museum and of the greatest scientific importance. The capacity of the curators of mammals and birds for total indifference to albino specimens is so great that nothing could have stamped the interview more plainly as imaginary.

The embryonic monsters usually die early in development, but may occasionally be hatched or born alive. Though in part also the result of heredity, they are mainly the result of some embryonic accident, either physical or chemical. Two-headedness is merely a special case of the phenomenon of twinning. Experiments with amphibians have shown how all kinds of duplications may be produced, and it is this, and the extent to which the tendency to defective development may be inherited, that are of interest with respect to monsters. It is the rare event of such a monster being not only born or hatched but able to live that provides freaks for the circus side-show.

Since such embryonic defects occur also in human development, there tends to be a morbid interest in them. Human monsters were formerly carefully preserved in spirits and exhibited in museums of natural history. They are now regarded as more appropriate to the medical museum, where such collections may still be seen, and to the medical statistician. The natural history museum would use such specimens only to exhibit the *phenomena* of abnormal development; but a two-headed calf or a six-legged one is less suitable for this purpose than the laboratory-produced salamanders and frogs. We are fortunate to be able to avoid this field of morbid interest.

KARL P. SCHMIDT
Chief Curator of Zoology

THIS MONTH'S COVER

Kachina dolls aren't playthings to Hopi Indian children—they are intended to further the children's religious education. Each doll imitates the costume of a kachina dancer, who in turn is impersonating a Hopi deity. On the left in our cover picture is a "wakas kachina" (cow kachina) that appears in many dances. On the right is a "Hano mana kachina" (maiden) from the Hano colony that moved in with the Hopi and adopted many of their customs. These two dolls are from a collection presented to the Museum by Byron Harvey III of Chicago. They are included in a special exhibit of kachina and other Indian dolls to be shown in Stanley Field Hall to carry out the Indian theme of Members' Night on Friday, October 10. They will continue on exhibition for the general public from October 11 to November 9.

HOBBY CONTRIBUTES TO BIRD RESEARCHES

Hobbies, when seriously pursued over a period of years, sometimes lead to results not only gratifying to the individual but also of much value to science. Such has been the experience of T. B. Mönniche of Boquete, Panama, a former Canal Zone engineer who for a number of years collected bird skins for recreation while developing a coffee plantation in the humid cloud-forest zone of the western cordillera.

Finca Lerida, as Mönniche's plantation is known, is only a few miles distant from Volcán Chiriquí, Panama's highest mountain. There, in a region partly under cultivation but with much of the original forest intact, Mönniche studied birds at all seasons, and through the years amassed a collection of some 2,000 meticuously labeled specimens representing more than 250 distinct forms. All were taken at altitudes exceeding 5,000 feet in a region of special interest to ornithologists, both historically and by virtue of the implications of its geographic position.

The major portion of the Mönniche collection, or some 1,600 specimens, was recently acquired by the Museum. It contains many species and geographical varieties not previously represented in our collection and is rich both in endemic forms and in "topotypes," the latter being specimens taken in localities from which came those that were first described as new to science. While others have collected birds on and in the vicinity of Volcán Chiriquí, Mr. Mönniche was the first to do so at all seasons over a period of years. Studies based on so notable a collection should add much to our knowledge of Middle American birds, to the lasting credit of the persevering hobbyist. —E.R.B.

In the African section of Hall E are some ostrich eggs, engraved with simple geometric designs, used as water containers by the Bushmen, primitive hunters of South Africa.

MUSEUM MEMBERS INVITED TO A STAGE SHOW AND PREVIEW

ON MUSEUM MEMBERS' NIGHT, which comes this year on Friday, October 10, the big event of the evening will be "American Indian Style Show." Thirty-four young women from the Art Institute of Chicago will appear on the stage of the Museum's James Simpson Theatre as models to display authentic costumes selected from among the most beautiful that have been fashioned by many tribes in all parts of the United States.

The presentation of this show will climax the four-feature program arranged for Museum Members and the guests each Member is invited to bring. Two of the other features carry out the Indian motif that prevails for the evening—a special exhibit in Stanley Field Hall of Indian dolls from the collections of Byron Harvey III and Mrs. Lenore Blanchard Warner (both Chicago residents) and a preview of a new Hall of Plains Indians that will be open to the public on the day after Members' Night. Separate articles on each of these exhibits will be found on pages 5 and 6. The fourth feature of the evening will be open house. For this our visitors are invited to explore "behind the scenes" on the third and fourth floors, meet the members of the Museum staff, and ask questions about any phases of the Museum's operations in which they may be interested. There will be elevator service to the upper floors.

SLAUGHTER FOR MEAT IN THE OPEN SPACES

Diorama in new Museum hall showing a typical buffalo hunt of the Plains Indians. Groups of about thirty hunters, using arrows and lances, could kill about 300 buffaloes in fifteen minutes. The scene shows a hunt as observed by white men about 1832. This type of hunting was most popular in the 18th and 19th centuries. The diorama was made by Alfred Lee Rowell of the Museum staff and will be on view for visitors on Members' Night, October 10, and for the public thereafter.

TIMETABLE FOR VISITORS

Here's the timetable for the evening: The Museum doors will be open at 6 P.M. Any Members who desire to have dinner at the Museum will find the Cafeteria on the ground floor open from 6 to 8 P.M. (regular service and prices). The special exhibit of dolls and the new Hall of Plains Indians may be seen by visitors any time from 6 to 10:30 P.M. Open house in the laboratories, studios, offices, and workshops on the third and fourth floors—areas that are not accessible to the general public—will be from 7 to 10:30 P.M.

The stage show in the James Simpson Theatre will run from 8:30 to 9:30 p.m. The Theatre has seats for more than 1,100 persons, but, judging from the attendance on last year's Members' Night, its capacity may be taxed to the full. Therefore, those wishing to see the performance are urged not to wait until the last minute.

"American Indian Style Show" will provide a colorful and exciting kaleidoscope for both men and women because of the wide variety of the cultures represented and the wide contrasts of design demonstrated. Tribes of most of the principal geographic areas—Eastern Woodlands, Great Plains, Southwest, Northwest Coast—will be represented.

ORIGIN OF CURRENT FASHIONS

For the women in the audience, the show will have a special interest because they will immediately recognize in the costume patterns, colors, and designs the origins of many of their own fashions found in the swankiest shops—styles of the current season, styles worn in past years, and, no doubt, styles of the future. Some women may be interested in anticipating the future by making mental notes for designing of their own based on costumes of America's aboriginal inhabitants. Just at the present time there is a definite fashion trend among the younger set for dresses based on Seminole designs.

The producer of the show—Frederic H. Douglas, Curator of Native Art at the Denver Art Museum—will be on the stage to provide a running commentary as each of the models appears in the spotlight. This pageant has been presented in museums of other cities and has received great acclaim.

Curator Douglas furnishes the following explanation of the aims of his show:

(*Continued on page 4, column 1*)

MEMBERS' NIGHT

Friday, October 10

7 p.m. to 10:30 p.m.

(*Museum doors open at 6 p.m.*)

FOR YOUR CONVENIENCE—

Special Motor-Bus Service has been arranged for Museum Members and guests. Bus will leave Michigan Avenue and Jackson Boulevard at 15-minute intervals beginning at **6:30 p.m.** Returning, last bus will leave Museum at **10:45 p.m.** Transportation is free—no fares, no transfers. The bus will stop at 7th and Michigan on each trip to and from the Museum.

You May Dine at the Museum in the Cafeteria (ground floor). **Open 6 to 8 p.m.** (regular service and prices).

FOR YOUR ENTERTAINMENT—

– THE PROGRAM –

Special Exhibit: Dolls of American Indians—Stanley Field Hall (first floor). The collections of Byron Harvey III and of Mrs. Lenore Blanchard Warner (**6–10:30 p.m.**).

Preview of New Hall: The Plains Indians (Hall 6, first floor east). Lifelike dioramas and other new-style exhibits (**6–10:30 p.m.**).

Open House: "Behind the Scenes," 7 to 10:30 p.m. Visitors are invited to take elevator to third and fourth floors where the scientific staff and other Museum workers will welcome them in laboratories, studios, offices, and the Library and explain various phases of a museum's operation.

STAGE SHOW, 8:30–9:30 P.M.

In James Simpson Theatre
(Ground Floor West)

"AMERICAN INDIAN STYLE SHOW"

Thirty-four young women will model costumes from tribes in all parts of the U. S., under the direction of Frederic H. Douglas, Curator of Native Art, Denver Art Museum.

MUSEUM MEMBERS' NIGHT—

(*Continued from page 3*)

"The main purpose is to help promote inter-racial understanding by pointing out in dramatic fashion the basic resemblances between peoples of different races rather than playing up the slight superficial differences between them. Women of both Indian and White groups share a deep common interest in fine clothing and have achieved results that in many ways have remarkable similarity in purpose and function if not in actual details of materials used. Like her White sister, the Indian woman is well aware of new materials for construction and decoration and of the most effective use of these materials. Her styles change more slowly than those of our life—in response to the same felt need for something different now and then. She recognizes clearly that different types of garments are indicated for different purposes, that dressing up does something important for a woman's psyche.

"All of the clothes are of Indian manufacture and none is a replica. The clothes range in time from about 1830 to 1948, though many represent types of greater antiquity. In geography the range is from Florida to Labrador to British Columbia to Arizona. In function the range includes party dresses of many types, house and work clothes, and costumes for special social or religious events such as debuts and weddings.

"A feature of the show that sometimes puzzles people is the absence of feathers. Actually, women under native conditions wore feathers relatively rarely and then under ceremonial conditions. Indian women were also for the most part hatless. Basket caps were once worn fairly widely in the West, but they hardly came within the scope of the word 'hat.'

"Though Indian women's dresses seem to be bewildering in variety there are actually only seven basic types in the United States and Canada, each characteristic of one large area. For example, practically everywhere west of the Rockies and south of the Columbia River the basic dress was a pair of fore-and-aft aprons. In the entire area east of the Mississippi, except to the north, a short wrap-around skirt was the fundamental garment. All of these types were adaptable to infinite variations and one of the most interesting aspects of the Style Show is the skill and taste displayed by Indian dressmakers in working new materials into the old basic dress-designs."

STAFF TO WELCOME MEMBERS

After the show, as part of open house, those especially interested in the Indian costumes or in Indian lore in general will have an opportunity to discuss these subjects with the curators of American ethnology and archaeology in the Department of Anthropology.

Chief curators, associate curators, assistant curators, artists, taxidermists, plant-reproduction experts, technicians, librarians, and other members of the staff will be present to greet Museum Members, to answer questions, and to demonstrate some of the unusual things they do in preparation of exhibits. The open house will also provide opportunity for Members to learn first-hand from these members of the staff something about the institution's world-wide expeditions and about developments in natural-science research.

NEW TECHNIQUES USED

The new Hall of Plains Indians, which will be previewed on Members' Night, apart from its interest for its own subject, is notable also as the latest example of new exhibition techniques being used in the Museum. This new method of preparation of material is gradually giving a new face to exhibits in all departments—Anthropology, Botany, Geology, and Zoology. Its utilization reduces the specimens placed on view from a quantitative standpoint and increases their value qualitatively. The material shown is selected because it is significant. Specimens within a case and from case to case are chosen for relation and inter-relation to tell a connected story. Thus the visitor is not confronted with the long rows of specimens that characterized exhibits of old-fashioned types. Attractive and contrasting pastel colors in backgrounds, the most advanced forms of lighting, and a wide variety of novel devices to link exhibited material and explain its meaning combine to dispel any vestiges of the old-time complaint known as "museum fatigue."

For the convenience of visitors coming by all means of transportation and from all parts of the city, the Museum has arranged for special bus-service for which no fares will be collected and no transfers required. A chartered bus will leave Michigan Avenue at Jackson Boulevard for the Museum at intervals of about fifteen minutes, beginning at 6:30 p.m. Frequent returns from the Museum to the Loop will be made, the last bus leaving the Museum at 10:45 p.m.

DEVONIAN VERTEBRATES FROM NOVA SCOTIA

Many of the discoveries of early vertebrates have been made in sediments that are otherwise nearly devoid of fossils. Such a formation, exposed near the shores of Northumberland Straits in Nova Scotia, was visited this summer by Dr. Robert H. Denison, Curator of Fossil Fishes. It consists of a thick series of river-deposited red and green shales and sandstones, among which many hours of the most careful search may yield nothing but a few poorly preserved plant fragments.

After several unrewarding days, a small bluish fragment of bone was found. Traced uphill, the layer from which it had come was finally located and proved to be full of small pieces of bone. When part of the overburden had been removed to expose this layer, not only fragments but also occasional entire shields of armored fish-like vertebrates came to light. A preliminary study at the Museum has indicated that these creatures lived about 350 million years ago at the very beginning of the Devonian period. They are the first well-preserved specimens of this age to be found in North America.

Dr. Denison also brought back a few vertebrates from still older Silurian black shales near St. John, New Brunswick. Collections were made in younger Devonian rocks at Campbellton, New Brunswick, and at Miguasha, Quebec. These two localities contain varied and well-known fish faunas that hitherto had not been adequately represented in our collections.

STUDIES OF SALAMANDERS IN MEXICO COMPLETED

The second summer of field work in central Mexico by Clifford H. Pope, Curator of Amphibians and Reptiles, proved to be even more successful than the first (1951). The main object was the investigation of salamander ecology and distribution in the rugged eastern slopes of the great Mexican plateau. The center of activity lay in the region between the cities of Jalapa and Orizaba. The former lies at the base of the Cofre de Perote, the latter just southeast of the Pico de Orizaba, highest of North American mountains except those of Alaska and immediately adjacent British Columbia. The Cofre de Perote and the Pico de Orizaba lie at the extremities of a mountain area rich in salamander life, and a valuable collection accompanied by copious ecological notes was secured.

Curator Pope did not confine his activities to the study and collection of salamanders but secured hundreds of specimens of other amphibians and reptiles as well. All of these abound in the rich vegetation of the lower mountains where even much of the country under cultivation affords excellent cover for these cold-blooded animals. This dense cover is in the form of coffee-banana plantations where the low coffee bushes are shaded by banana plants and various kinds of trees.

This field trip lasted from June 16 through September 3, dates of departure from and return to Chicago. A distance of some 7,500 miles was traversed by automobile.

I hold the unconquerable belief that science and peace will triumph over ignorance and war, that nations will come together not to delay but to construct, and that the future belongs to those who accomplish most for humanity.—*Louis Pasteur*

A Members' Night Feature . . .

AMERICAN INDIAN DOLLS IN A SPECIAL EXHIBIT

By CHRISTINE TARDY
BULLETIN STAFF WRITER

IN OUR OWN CULTURE, dolls are children's playthings, and this is true in most cultures. There are, though, a few societies where dolls are unknown, and there are a few others where special kinds of dolls are *not* playthings. To complement the Indian theme for Members' Night on Friday, October 10, the Museum is placing a special exhibit of Indian dolls in Stanley Field Hall. Dolls of American Indian tribes from coast to coast and border to border are being shown, along with a few from Eskimo tribes. Most of the dolls were made for Indian children to play with, but the fascination of many derives from their functions when not intended as toys.

The kachina dolls on exhibition come from the Hopi people of the Southwest. They are part of a collection of 180 kachina dolls recently presented to the Museum by Byron Harvey III of Chicago, who has been collecting kachinas since he was a youngster. *Two are shown on our cover.*

Although Hopi kachina dolls are made for and given to children, they are not to play with but are used as a means of educating the children in religious tradition. Kachinas have three aspects: (1) supernatural spirits as they exist in the minds of the Hopis, (2) the masked impersonators of supernatural beings who perform dances in the religious ceremonies, and (3) the small dolls carved in likenesses of the dancers impersonating the spirits.

DOLLS ARE SCULPTURE

When a kachina ceremony is about due, a man will go along the banks of the river in search of a three-to-four-inch-thick root of a dead cottonwood tree, which he cuts off. With a chisel and a saw, he roughs out his sculpture and with a penknife he whittles out simplified detail. Then he sands it smooth with a piece of sandstone, adds a coat of white kaolin paint, puts touches of color here and there in simplified emulation of the dancer's costume, adds feathers and bits of horn or bone where needed to imitate decorations, and hides it until the appointed day for presentation to his small child. From December to July each year there occurs a whole series of "Christmases" for Hopi children, because with each kachina ceremony (about one a month in this period) all children receive presents of kachina dolls, sweets, fruits, and toys. The kachina dolls are not to play with, however, but are hung up on walls of the child's home to be studied, and in this way the child becomes acquainted with aspects of the Hopi religious traditions.

Other non-toy functions of certain Indian dolls, aside from those of the kachina dolls, are to be seen in the collection of Mrs. Lenore Blanchard Warner of the Museum's Department of Botany, lent for this exhibit from her personal collection. Mrs. Warner's interest in Indian life goes back to her childhood, when she played with Indian children out west. But her interest in Indian dolls began twenty-five years ago when her anthropologist husband, the late Paul J. Warner, who spent many years with Indian tribes, once brought her a pair of cornhusk dolls made by a blind Iroquois woman. (Mr. Warner was a member of the staff of the Museum's Department of Anthropology for twelve years before his death in 1950.) Later she received more Indian dolls in payment for illustrating a book about Indians. By this time she had developed an active interest in Indian women and children, in their customs, and in dolls, and has devoted the years since to extensive research on these subjects. In talks before women's groups, she uses the dolls to illustrate aspects of Indian life.

COLLECTOR'S ITEM

Doll of the Sauk and Fox. It is carved from wood and dressed with painstaking faithfulness to tribal clothing traditions, complete even to a small fur cap and decorative beadwork. In the exhibit of dolls from collection of Mrs. Lenore Blanchard Warner.

EVEN AN 'IMAGINARY' DOLL

One of the most interesting in Mrs. Warner's collection is an *imaginary* doll! From the Sioux of South Dakota, she has a beautifully beaded miniature cradleboard or papoose-carrier, filled with soft milkweed floss, worn by a woman whose baby had died. The mother carried this on her back and rested it on the bank of a stream as she did her washing or fishing, talking and cooing to it as though a live baby were there. It seemed to alleviate her grief, and the pretending might help her to realize the hope that soon another baby would come along to fill a real cradleboard.

DOLLS NOT FOR PLAY

Eskimos occasionally make dolls to represent deceased persons, and these are taken to feasts and "fed" in order that the departed may continue to enjoy the company and good times of friends. These are carved of bone or ivory. Mostly, however, Eskimo dolls are children's playthings. A doll from Greenland in Mrs. Warner's collection is a perfect miniature fashion-plate with tiny sealskin boots (fur side turned in), an eider-down-lined coat, and an intricately beaded yoke collar.

A number of the dolls are useful for a study of clothing customs. There is an Apache doll with "cactus-snubber" moccasins—the tip of the sole is extended in front of the toes to prevent sharp cactus from hurting the feet. Another Apache doll represents an attempt to emulate fashions seen on white women in the year 1860. The leather is carefully cut into fringe to represent rows of ruffles, and the doll is given an off-shoulder neckline and bobbed hair.

Among the Navaho, dolls made before the Indians' contact with the friendly Mormons show the Navaho woman's dress as two blankets fastened together at the shoulders. But as soon as calico became available, Indian women took up the Mormon woman's costume of long full-flounced skirt and belted overblouse. All this is shown in the costuming of some of the dolls.

The smallest doll is about one and one-half inches tall, and the largest nearly two feet tall. They date from the early 1800's to the present. After Members' Night, the dolls will be on exhibition for the public until November 9. Visitors should not expect them to be in perfect condition—the paint is worn on many, and others have suffered the fervent hugs of many a small Indian—but all have interesting stories behind them.

NATURE PHOTO CONTEST ENTRIES INVITED

All photographers, both amateur and professional, who include nature subjects in their work are invited to submit entries for the Eighth Chicago International Exhibition of Nature Photography to be held at the Museum February 2 to March 1. Sponsored jointly by the Nature Camera Club of Chicago and Chicago Natural History Museum, the contest awards silver medals and ribbons to winners in various print and slide classifications. Divisions are *Animal Life*, *Plant Life*, and *General* (scenic).

Deadline for entries is January 17. All entries should be sent to the Museum. Entry forms and a complete summary of conditions of the contest may be obtained from the Museum.

NEW HALL PREVIEW—MEMBERS' NIGHT . . .

EXHIBIT OF NOMADIC PLAINS INDIANS' CULTURE

By GEORGE I. QUIMBY
CURATOR OF EXHIBITS

THE NEW EXHIBIT of Plains Indian culture will be open to the public on October 11 after a preview by Museum Members and guests on Members' Night, Friday evening, October 10. The exhibit occupies the west half of Hall 6.

The Plains Indians were nomadic hunters. They used horses for travel and transportation and for hunting the buffalo. Before the 17th century the Plains Indians did not have horses and the Plains area seems to have been a marginal region where making a living was somewhat difficult. However, the introduction of the horse from the Spanish settlements in the Southwest in the 17th century provided the necessary mobility for efficient exploitation of the great herds of buffalo.

For instance, Plains Indian villages consisting of tipis or skin-covered tents could be quickly moved from place to place. Tents and all other belongings were packed on horses or dragged behind horses on a pole-conveyance called a travois. Mounted hunters pursued the buffalo. In a typical buffalo hunt witnessed by George Catlin in 1832, about 300 buffaloes were killed in fifteen minutes by a group of about thirty hunters. Bows and arrows and spears were used to kill the buffalo. For this purpose bows and arrows were more efficient than the muzzle-loading guns of the period because the more primitive weapons could be shot more quickly.

The buffalo was the most important thing in the lives of the Plains Indians. The flesh of the buffalo was food, the hide was used for shelter and clothing and for many other things, the bone was used for tools and weapons, and the dried buffalo-dung was used for fuel. In short every bit of the buffalo was used.

The Plains tribes were the Blackfoot, Cheyenne, Arapaho, Crow, Gros Ventre, Dakota (Sioux), Kiowa, and Comanche. All of these tribes are represented in the new exhibit, which contains twenty-five individual cases that express important themes or categories of Plains Indian culture.

TYPICAL EQUIPMENT FOR PLAINS INDIAN CHILDREN

Cradles, toys, clothing, and other needs of children are included. This case exemplifies the new type of exhibit in the new anthropology hall opening on Members' Night, October 10.

These themes or categories are Men's Clothing, Women's Clothing, Livelihood, Travel and Transportation, Preparation of Food, Household Furnishings and Equipment, Children's Equipment, Games, Warfare, Pictographic War Records, Ceremonial Life, Equipment of the Medicine Men, and Art. The appearance of the Indians is shown by a group of original oil paintings made by George Catlin in 1832 Another exhibit shows the origin of Plains tribes and the introduction of the horse and how it changed Plains culture. One of the two dioramas in the new exhibit depicts a buffalo hunt; the other shows a typical village of skin-covered tents or tipis.

In addition to the exhibits illustrating Plains culture, there are ten exhibits dealing with inter-mountain tribes that were strongly influenced by Plains culture. These tribes were the Nez Percé, Kutenai, Flathead, Cayuse, Wasco, Yakima, Klikitat, Bannock, Shoshoni, Ute, Paviotso, and Paiute. All of these tribes originally were food gatherers and hunters who lived a life quite different from that of the Plains tribes. But with the flowering or climax of Plains culture, these tribes took over many Plains characteristics —clothing, shelter, buffalo hunting, art styles, etc., and added these to their own basic culture. Their own basic culture persisted but was overshadowed by the more spectacular Plains traits that they had adopted.

The exhibits were planned by the writer, as Curator of Exhibits, and were installed by Preparator Walter C. Reese. Artist Gustaf Dalstrom is responsible for the composition and colors used as well as the art work in general. Manikins used in the display of clothing were made by Ceramic Restorer John Pletinckx. The dioramas are the work of Dioramist Alfred Lee Rowell.

FREE CHILDREN'S MOVIES ON SATURDAY MORNINGS

Nine free motion-picture programs for children will be given in the Autumn Series to be presented at the Museum on Saturday mornings during October and November by the James Nelson and Anna Louise Raymond Foundation. Two of the film programs will be accompanied with talks by lecturers who appear also in the autumn lecture course for adults. The speakers are Don Catlin on October 11 and Murl Deusing on November 8.

The children's programs will be given at 10:30 A.M., beginning October 4, in the James Simpson Theatre. Children may come alone, accompanied by parents or other adults, or in groups from schools, clubs, and other centers. No tickets are needed. Following are the titles and dates of the programs:

October 4—THE STORY OF THE JUNGLE
Also a cartoon

October 11—THUNDERBIRD—ALONG NAVAHO TRAILS
Story by Don Catlin

October 18—THE MAGIC HORSE
A legend of a small boy and his tiny hump-backed horse

October 25—PEOPLE ALONG THE MISSISSIPPI
Also a cartoon

November 1—GETTING READY FOR WINTER
Also a cartoon

November 8—EXPLORING THE EVERGLADES
Story by Murl Deusing

November 15—INDIA
Also a cartoon

November 22—YOUR FAVORITE ANIMAL MOVIES
Also a cartoon

November 29—ANIMAL LEGENDS
Also a cartoon

SATURDAY AFTERNOON LECTURES, FILMS START OCTOBER 4

THE SMELL OF BURNING LEAVES and the early hints of chill in the air are accompanied by a renewed surge of interest in intellectual activities after summer's lethargy.

The Museum's annual contribution to autumn-stimulated intellectual hunger comes in a series of free lectures on Saturday afternoons throughout October and November. In each case the lecturer is the explorer who made the films illustrating his experiences—and the audience shares the adventure and is spared its discomforts. Time and space are traversed freely to bring inside reports of areas much in the news today—Africa, Japan, the Middle East, and Egypt. Adventures in this hemisphere will deal with wildlife, Newfoundland, Navaho territory, life in Florida's Everglades, and Guatemala.

The lectures will be presented each Saturday afternoon at 2:30 o'clock in the James Simpson Theatre of the Museum. Limited accommodations make it necessary to restrict these lectures to adults. For children, however, free motion-pictures will be presented on the mornings of the same Saturdays by the Raymond Foundation.

These are the adult lectures scheduled this season:

October 4—NEWFOUNDLAND

Dick Bird

Britain's oldest colony, which recently became Canada's newest province, abounds in moose, caribou, bear, and sea-bird colonies, not to mention the fertile fishing banks that first attracted European interest and settlers. Mr. Bird, of Regina, Saskatchewan, Canada, has filmed all this in color, in addition to a study of St. John's, North America's oldest city, with its crafts and industries and rugged scenery.

October 11—THUNDERBIRD—ALONG NAVAHO TRAILS

Don Catlin

The fantastic land of painted deserts, towering red spires, deep canyons, and rainbow arches, where dinosaurs once roamed, is the home of the Navaho. In spite of exploitation first by gold-hungry Conquistadores and then by trappers, traders, and land-grabbing settlers, the Navaho has managed to maintain parts of his once-great culture. Mr. Catlin, Research Associate in History, Milwaukee Public Museum, has recorded on color-film some of the ancient ceremonies and customs—tribal dances, sign language, medicine-men's rituals, marriage, courtship, and death customs—and on the sound-track he has recorded the songs and chants of the Navaho.

October 18—ACTION IN AFRICA

James T. Monesmith

Mr. Monesmith started out as a businessman with a special interest in hunting. This led him into adventures all over the jungles of Africa, after "small stuff" of this hemisphere developed his hunting skill. Fortunately for zoos, museums, and audiences, he "brings 'em back" both alive and dead and with exciting records on film. He is accompanied on his safaris by an expert big-game hunter—his 12-year-old daughter—who is a crack shot. This movie is of an adventure into hinterlands never before filmed.

MAYA CHILD 'ACTRESSES'

In highlands that bred a great civilization, Clifford J. Kamen found these sisters who play roles in his film, "Guatemala." Mr. Kamen shows this motion picture when he lectures at the Museum on November 29, in the Saturday lecture course that opens in the James Simpson Theatre October 4.

October 25—THE NEW JAPAN

Bowen C. Dees

Dr. Dees' three years in Japan just after the war placed him in touch with the most vital forces and personages now molding Japan's changing way of life. On film he has recorded the contrast between the old and the new as it appears from the Caucasian Ainu culture in the north to the industrialized and Westernized cities of the south. This documentary visualization of an unsettled civilization provides important background material for an understanding of Far Eastern affairs today.

RESERVED SEATS FOR MEMBERS

No tickets are necessary for admission to these lectures. A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats. Requests for these seats should be made in advance by telephone (WAbash 2-9410) or in writing, and seats will be held in the Member's name until 2:25 o'clock on the lecture day.

November 1—REALM OF THE WILD

A. Tyler Hull

American wildlife—of interest to the naturalist as well as the sportsman—is comprehensively filmed by this noted American camerman. Fishes and the underwater world of fairyland marine growth off Florida's coast are shown. Birds of the continent, familiar and strange, are to be seen as they live. Big and small game from all over the country are captured and studied in this color film.

November 8—EXPLORING THE EVERGLADES

Murl Deusing

Mr. Deusing's notable camera studies in nature (in Disney's "Nature's Half Acre" and "Beaver Valley") have won wide acclaim. During the war when he was unable to travel to exotic places for his subject-material in films, he went to his own back yard for actors and action. His film of the Florida Everglades is a penetration through prohibitive terrain in search of the unique plant, animal, and human life that makes its home there. He shows the Seminole Indians in their difficult adjustment to and conquering of this no-man's land. Mr. Deusing is Curator of Education at the Milwaukee Public Museum.

November 15—THE TROUBLED MIDDLE EAST

Colonel Homer F. Kellems

Films of explosive trouble-spots in the Middle East illustrate Colonel Kellems' lecture on the issues at stake and the peoples of this little-understood area. Here are mingled factors of diverse religions, economic systems, customs, and politics, all floating on "hot oil."

November 22—EGYPT—A VOYAGE INTO THE PAST

Ray Garner

The Nile begins high in the Mountains of the Moon, starting as single drops of water off the tip of Stanley Glacier. The 5,000-mile course of its majestic growth as it flows through a desert on its way to the sea and the course of the great kingdoms it has supported for thousands of years are traced with scientific accuracy and artistic presentation in this color-film.

November 29—GUATEMALA

Clifford J. Kamen

No two scenes are quite alike in Guatemala, and Mr. Kamen has tried to show this in his film. From village to village the people dress with distinct differences, so that you can identify a person's village by his clothing. There are places where the ancient Indian gods are worshipped still, in this land that knew the great Maya and Aztec civilizations.

APE-MEN OF AFRICA FOCUS OF STUDIES

BY ALEXANDER SPOEHR
CURATOR OF OCEANIC ETHNOLOGY

Through the generosity of the American Institute of Human Paleontology and the Wenner-Gren Foundation for Anthropological Research, the Museum has recently been presented with two fine casts of a mandible and pelvic fragment of a very important fossil find, *Australopithecus promethus*. In the never-ending search for man's early fossil ancestors, the spotlight is presently focused on South Africa, where in recent years a series of highly significant and curious finds has been made that bears directly on the problem of human

APE-MAN JAW

Cast of lower jaw of Australopithecus promethus. Although the jaw is not large (illustration about two-thirds actual size) the molar teeth are enormous, being at least twice the size found in man, although the cusp patterns exhibit many of the characteristics found in human teeth.

ancestry. These finds, including the two represented by the casts, consist of the remains of some thirty individuals and together are known as the Australopithecines.

The significance of these finds is that they combine a number of unusual features. These creatures had small brains and large jaws—both ape-like characteristics. On the other hand, certain aspects of the dentition are decidedly man-like. The bicuspid, first lower premolar, is remarkably human, and the canine teeth were small and apparently did not interlock—another human feature. The form of the dental arch also resembles the condition found in man. The skull, though small, is larger than that of the living apes. Furthermore, from the pelvis (hip bone) and the manner in which the skull was placed on the vertebral column it is certain that these creatures possessed erect posture in a distinctly human fashion. It is completely erroneous to consider that the modern apes are ancestral to man, but the Australopithecines combine human features with primitive anthropoid ones.

The mandible, the cast of which is shown in the accompanying photograph, was found in the central Transvaal. The upper part, or ramus, is missing. It is interesting to note that the jaw had been fractured before the death of the individual by a terrific blow directly into the face. In the words of Professor Raymond A. Dart, of the University of the Witwatersrand, who described the find, the fracture was caused by a "localized, crushing impact received by the face slightly to the left of the midline in the incisor region and administered presumably by a bludgeon."

The last point is interesting. Apes generally rely on teeth and nails in close-quarter combat rather than on weapons held in the hand (a human characteristic). The use of a hand-held weapon requires not so much more intelligence as upright posture—being able to pivot upright on the legs, which in turn are supported by something approaching man's principal specialization, the human foot.

The pelvic fragment is interesting in that it exhibits evidence for the upright posture of *Australopithecus*. Both pelvis and mandible are those of an adolescent.

How the Australopithecines fit into the pattern of human evolution is at present a matter of analysis and discussion. Whether they are an evolutionary radiation from the presumed Hominid ancestral stock, a radiation that later became extinct, or whether they lie closer to the main stream of fossil forms that eventually took the path leading to man is still not clear. Much depends on the geological dating of the finds, a question that has not yet been worked out except very roughly. The age of these fossil men is approximately a million years. Regardless of this uncertainty as to dating, their discovery has added a most significant group of fossils to the ever-growing record of the Primate forms preceding the known appearance of man.

GIRL SCOUTS TO STUDY NATURE AT MUSEUM

In accordance with its policy of co-operating wherever possible with worthy youth organizations in educational endeavors, Chicago Natural History Museum is extending the use of its facilities in connection with a "Nature Study Project" organized last month for the Girl Scouts of the Chicago region.

The project is sponsored by Howard T. Greene, president of Brook Hill Farms, Inc., of Chicago, in celebration of the fiftieth anniversary of his dairy farms at Genesee Depot, Wisconsin. Some 3,000 troops, comprising approximately 55,000 Girl Scouts, are participating. Included are not only those troops within the city of Chicago but also those of five Illinois counties (Cook, Lake, Kane, DuPage, and Will) and those of Lake County, Indiana. This area embraces the entire group of communities from Waukegan, Illinois, to Michigan City, Indiana.

Girl Scout leaders began bringing their troops to the Museum in September and will continue bringing them until November 21 to study the exhibits of birds, mammals, insects, and plants. The leader of each group selects one of these subjects for the girls to explore. On their arrival at the Museum, the Girl Scouts register and are provided with maps and directions to aid them in hunting out the exhibits that give the information required. The data to help them is prepared by the staff of the James Nelson and Anna Louise Raymond Foundation, one of the two divisions of the Museum devoted to correlating the institution's educational resources with school programs.

After their visits to the Museum, the Girl Scouts are to write, on behalf of each troop, a letter on "What We Learned at the Museum About Mammals" (or flowers, birds, or whatever subject any particular troop chooses). These letters must be submitted to Brook Hill Farms before November 22. The letters will be considered for merit, and to each of the 100 troops judged to have written the best letters Brook Hill Farms will present an official Girl Scout American flag. Miss Miriam Wood, Chief of the Raymond Foundation staff, will be one of the judges.

AWARDS IN DECEMBER

Presentation of flags to winning troops will be made at a ceremony in the Museum's James Simpson Theatre on Saturday, December 6. Girl Scout leaders and families of members of the winning troops will be invited to attend. There will be music by a leading service-club band, and a soloist will lead in the singing of "The Star-Spangled Banner." Colonel Clifford C. Gregg, Director of the Museum, will act as host, and presentation of the awards will be made by Mr. Greene on behalf of Brook Hill Farms. Officials of the Girl Scout councils will be on the stage as guests of honor.

The project was officially begun on September 27 with a flag-raising ceremony at the Museum in which a group of senior Girl Scouts participated. Mr. Greene, Museum representatives, and officials of the Girl Scouts attended.

Because of the impetus supplied by this project, it is expected that organized nature-study by Girl Scout troops will be continued on Museum visits throughout the winter months.

Distinguished Visitor from India

Dr. M. R. Sahni, a supervising geologist attached to the Geological Survey of India, with headquarters at Calcutta, recently spent several days inspecting collections at this Museum. He consulted with Dr. Sharat K. Roy, Chief Curator of Geology, and Eugene S. Richardson, Jr., Curator of Invertebrate Paleontology.

MUSEUM NEWS FLASHES ON 4 TV STATIONS

Chicago Natural History Museum has taken the first steps toward an extensive use of television for publicizing its educational activities and for spreading knowledge in the fields of natural science.

Arrangements have been completed with all four of the Chicago television stations (WNBQ, WBKB, WENR-TV, WGN-TV) for the carrying of Museum news and announcements with pictures, both still and "live," of specimens from Museum collections or of complete exhibits. The service has begun, and material appears on each station on an average of twice a day. The first releases of this type of material went on the air in August. They appear in station breaks—8-to-60-second "spots" in the intervals between regular programs. Although they are given frequently, no definite scheduled times are set. In all cases, the stations are televising this material as a part of their public service and educational activities without any cost to the Museum. They are thus making a contribution of time that at commercial rates would cost several hundred dollars a day.

In addition, several plans are under consideration whereby, in the not far future, the Museum may be able to present material in regular programs or series of programs, probably running to one-half hour in length. If suitable sponsors or subsidization should become available, the inauguration of a valuable educational service could be expedited.

MUSEUM A TV PIONEER

Some Chicagoans may recall that 'way back in the early days of television, when there was only one station on the air in Chicago and only about one hundred homes in the city had receivers, the Museum pioneered in experiments with television as an educational medium. That now seems long ago in video history, although actually it was as recent as 1940. At that time members of the Museum's scientific staff and lecturers of the Raymond Foundation appeared in a series of twelve educational programs given over what was then Chicago's only TV station—W9XZV, operated by the Zenith Radio Corporation. The Museum speakers demonstrated the subjects of their talks with ethnological, botanical, geological, and zoological specimens (some of the last named, like turtles and snakes, were alive).

Later, as television progressed, the Museum continued to participate in occasional programs, especially in the past few years during which families in Chicago with television sets have increased from the original one hundred or so to several hundred thousand.

At the time of the experimental work on the old Zenith station, Colonel Clifford C. Gregg, Director of the Museum (then Field Museum of Natural History), wrote in Field Museum News (May, 1940):

"Looking to the future, we see in television a peculiarly efficacious opportunity for the distribution of information to hundreds and thousands of persons simultaneously. It is conceivable that simultaneous instruction, visual as well as auditory, may eventually be transmitted from a central point to school classrooms in every state in the union, even as we are today giving auditory classroom instruction by radio. Through television we will have many additional advantages, by being able to demonstrate, as well as tell about our subjects. The children will learn through their eyes, as well as their ears, since we will thus be able to bring our materials to them—living animals and plants, as well as inanimate objects. Further, it will be possible to demonstrate methods with action. In this way many children will see objects, living creatures, and processes which would not be otherwise available to them. In some instances demonstrations may safely be given by television which, if given in individual classrooms or assemblies, might involve hazards, as in the case of chemical experiments, or as in the Zenith-Field Museum series where during a lecture on reptiles, living poisonous snakes were held up to view.

"It is highly appropriate that Field Museum, which is not only a teaching institution, but a research organization as well, should be among the pioneers in the discovery of and experimentation with new and better methods of accomplishing its purpose. Therefore we especially welcome television as a new outlet through which to give the world the results of scientific discovery."

Today it seems that Colonel Gregg's aspirations may be on the verge of full realization.

BROADER RADIO SCOPE, TOO

In addition to its television project, the Museum's Division of Public Relations has in the past few months broadened its coverage of radio stations. Always, in the last quarter-century since radio broadcasting has been a serious factor in communications, the Museum's publicity releases for newspapers have been sent also to the newsrooms of the principal radio stations of the Chicago area and to the national networks. Much of this material has been heard over the air. In past years, the Museum has also had several series of programs of its own on various stations and has co-operated in programs of other organizations.

Under the latest extension of the Museum's radio efforts, in addition to the news releases sent to stations, a new series of "spot" announcements for radio (different from those on TV) has been inaugurated. These announcements are especially designed for station breaks. With the beginning of this service in July, the list of radio stations covered was increased to 26, large and small, both AM and FM, or nearly all of the stations in Chicago. All of these were queried before service was instituted, and all responded that they would and could use such material. The results, estimated from such scattered listeners' reports as are available, have been excellent.

The Museum would be pleased to hear from its members, and others, reports of stations, hours, and dates when they see or hear Museum television or radio material and also their reactions to it. This data will help evaluate the effectiveness of activity through these media.

STAFF NOTES

Dr. Fritz Haas, Curator of Lower Invertebrates, left for Florida early in September on a field trip. Establishing headquarters on a quiet beach on the Atlantic Coast, he is collecting marine animals of various kinds and studying the life conditions of beach-dwelling creatures. **Philip Hershkovitz**, Assistant Curator of Mammals, has returned to the Museum from Colombia after three years of intensive collecting. He obtained some birds, insects, reptiles, and amphibians as well as specimens in his own field.

Miss Miriam Wood, Chief of the Raymond Foundation, is in New York for a month as one of the five representatives of the United States at a UNESCO-sponsored international seminar on "The Role of Museums in Education." The seminar, held at the Brooklyn Museum of Arts and Sciences, is limited to 45 participants from member countries of the United Nations.

Miss Edith Fleming has been appointed to the lecture staff of the Raymond Foundation. She is a graduate of the University of Chicago and has a master's degree in anthropology from that institution. Before coming to the Museum, Miss Fleming was a research assistant for the University's Committee on Human Development. She replaces **Mrs. June Buchwald**, who has resigned.

Dr. Julian A. Steyermark, Curator of the Herbarium, was recently invited to attend the Third General Assembly of the International Congress for the Protection of Nature held in Caracas, Venezuela, in September. Although unable to go, he forwarded a paper to be read at the congress on "The Destructive Effect of Dams to Plant Life," based on a botanical survey that he made in certain areas of the Ozarks.

Dr. Paul S. Martin, Chief Curator of Anthropology and leader of the Archaeological Expedition to the Southwest, has completed his season of excavations in New Mexico and returned to the Museum. **Dr. John B. Rinaldo**, Assistant Curator of Archaeology, and **Miss Elaine Bluhm**, Assistant in Archaeology, are also back at their Museum desks. Other members of the expedition, who served as temporary assistants to the Museum personnel, were Miss Marjory Kelly, research archaeologist, and two students of archaeology, Robert Adams and Thomas Alder.

COLOR CHANGES IN LEAVES AND THEIR MEANING

EVERY AUTUMN we are given a magnificent display of color that outdoes anything technicolor can produce. At its most spectacular in the broad-leafed deciduous trees of the temperate zones, this familiar phenomenon has long fascinated nature lovers and scientists alike. But for all the centuries it has been observed, we are only now approaching a complete understanding of color change in nature and its meaning in the life of the plant, for the chemical and physical processes involved are extremely complex.

Autumn coloring, an outward expression of fundamental changes inside the leaf, seems to be mainly associated with the waning vitality of the leaf. As the season of growth slows up toward a stop, a special layer of cells forms at the base of the leaf. Behind this layer, the cells of the stem become corky and clog the passage of water. This cuts down the exchange of materials to and from the leaf, which interferes (among other things) with the development of chlorophyll, the all-important green pigment so essential in the production of organic substances from the inorganic raw materials taken in by the plant. If more chlorophyll (which means "green leaf" in Greek) cannot be manufactured to replace that lost through destruction by sunlight, the leaves lose their green color.

GREEN TURNS YELLOW

When that happens, any other coloring matter formerly masked by the green may show up. There is also some evidence to indicate the formation of new coloring matter not present in the leaf before decomposition of the chlorophyll began.

As the green disappears, yellow is most apt to replace it. Two important yellow pigments—carotene (named from carrots) and zanthophyll ("yellow" in Greek)—are always found in association with chlorophyll. You can demonstrate this easily by warming some fresh green leaves in ethyl alcohol. Add an equal quantity of benzene, shake up the mixture, and watch it separate into two layers, an upper green one and a lower yellow one. The top layer, of course, is chlorophyll dissolved in benzene, and the bottom layer is carotene and zanthophyll dissolved in alcohol. Because yellow pigments have greater stability in sunlight, they are usually seen after the sun has destroyed the chlorophyll.

'PHOTOGRAPHIC' PHENOMENON

Red colors may also appear. You may have noticed that a bright and sunny autumn sometimes produces more vivid coloration than a dull and cloudy season. When chlorophyll disappears, more light is admitted to the leaf, which may affect the development of red pigments. If you cover part of a maple or oak tree as it is changing, the shaded section will stay yellow while the rest turns red. Sometimes one leaf will "photograph" itself onto another when one shades another. The upper leaf will be red, from more sunlight, and the shaded section of the lower leaf will be yellow, following perfectly the outlines of the leaf above.

TEMPERATURE A FACTOR

Temperature has something to do with it, too. As it happens, leaves that develop the greatest intensity of red, such as the maples, are rich in sugar. An abrupt change from high summer temperatures to low autumn temperatures may retard the movement of sugars and other materials out of the leaf and be conducive to pigment formation more spectacular than that produced by gradual temperature change. This is because most of the red, blue, and purple colors of plants are caused by pigments known as anthocyanins ("blue flower" in Greek), which must have sugar in order to form. And it may be that lower temperatures hinder the conversion of sugar to starch, thus aiding the change to red.

Aside from sunlight and temperature, injuries inflicted by insects, breaks, or fungus can cause color change. When you see a leaf partly yellow and partly red, it may be due to such an injury. The injury or cut probably happened while there was still a lot of sugar in the leaf and if the sugar could not be transferred from the severed section as would be normal, it would remain for anthocyanin formation. The section above the cut in such leaves would stay green longer than the rest of the leaf but finally turn red in leaves that make anthocyanin.

WHY RED?

Anthocyanin pigments can be extracted from plants with water, as you know if you've ever boiled beets. Whether red or blue predominates in a plant depends in many instances on the reaction of the sap in cells where the pigments occur. When the cell sap is acid, the color is red, and when it's alkaline, the color is blue. We don't advise spraying a sugar maple with alkali to make its leaves turn blue, but you can take a red leaf and change it to blue with a few drops of an alkali, and you can make a blue flower red by putting it in a weak acid solution.

In some plants, production of anthocyanins is a hereditary character and these plants can become red in the absence of light, as do beet roots, but others fail to develop anthocyanin if deprived of blue-violet and ultraviolet radiation. Recent experiments showed that it is possible artificially to color apples picked late in the summer by using ultraviolet light.

As we witness these dramatic color-changes in plants and study the chemical and physical processes controlling them, we constantly gain in our understanding of the real importance of these changes to the plant and, thereby, to all living matter.

—C.T.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From *In Brightest Africa* by Carl E. Akeley:

"By the time I had finished the deer groups I had become pretty well convinced that a real taxidermist needed to know the technique of several quite different things.

"First, he must be a field man who can collect his own specimens, for other people's measurements are never very satisfactory,

Virginia Deer in Autumn. Prepared 50 years ago by the late Carl E. Akeley, this is one of the "Four Seasons" groups exhibited in Richard T. Crane, Jr., Hall (American Mammals, Hall 16).

and actual study of the animals in their own environment is necessary in making natural groups.

"Second, he must know both animal anatomy and clay modeling in order to make his models.

"Third, he should have something of the artistic sense to make his groups pleasing as well as accurate.

"Fourth, he must know the technique of manikin making, the tanning of skins, and making of accessories such as artificial leaves, branches, etc.

"With all these different kinds of technique in taxidermy it is obvious that if a man attempts to do practically everything himself, as I did in the deer groups, taxidermy must be a very slow process—just as if a painter had to learn to make his own paint or a sculptor to cast his own bronzes or chisel his concepts out of granite or marble."

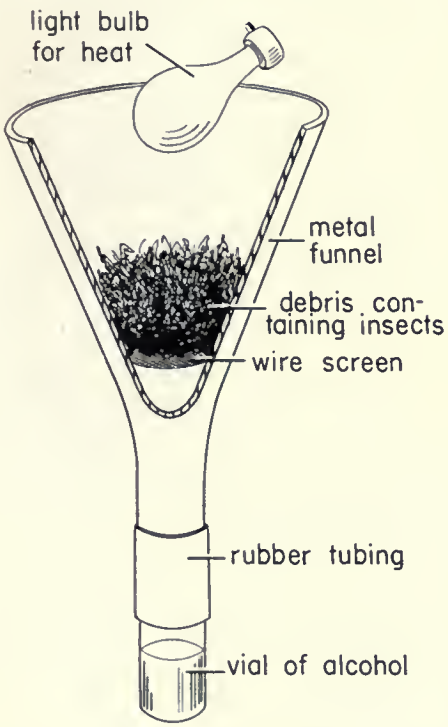
Australian Museum Aide a Visitor

F. R. Morrison, Deputy Director of the Museum of Applied Arts and Sciences, Sydney, Australia, was a recent visitor at Chicago Natural History Museum. Mr. Morrison is a delegate to the UNESCO seminar on "The Role of Museums in Education" in Brooklyn, New York.

HOW COLLECTORS OBTAIN SMALLEST INSECTS

By HENRY S. DYBAS
ASSOCIATE CURATOR OF INSECTS

COLLECTING specimens for the research and reference collections is one of the more important as well as colorful activities of the Museum staff. The museum entomologist has an especially big collecting job, as our planet seems to be more richly endowed with insects than with any other kind of life. One type of insect collecting—the stalk and wild gallop with a butterfly net—is familiar enough to most of us. It is a perfectly legitimate way of collecting the larger and more conspicuous and active insects, as well as being good clean fun. But most insects, either because of their cryptic habits or their small size, cannot be collected in this way. The smallest of insects are about one-hundredth of an inch long and are scarcely visible under the most favorable light and against a white background. In comparison with insects of such size, the mosquito and housefly are giants.



AN INSECT FUNNEL

Diagram of a simple apparatus used for collecting microscopic insects, as described in accompanying article by Associate Curator Henry S. Dybas.

Minute insects are no less interesting scientifically or important economically than are large insects. We need to know about these small things, and our collections should contain them for study and comparison. But these small forms remain relatively much less known than the large species. It is one thing to discover a bird or a butterfly in a tropical forest, but it is a very different matter to detect a speck of an insect, one-fiftieth of an inch long, that is hiding in the leaves and twigs on the forest floor.

ENTOMOLOGIST'S TRADE SECRETS

Visitors, who see some of these small kinds of insects in our collection, commonly ask, "Just how does one see and collect anything that small?" The answer is partly in knowing where to look and what to look for and partly in the use of special equipment. The most generally useful piece of special equipment for collecting tiny hidden insects is the insect funnel.

With an insect funnel, an entomologist can extract an astonishing variety and number of insects out of such situations as decayed logs, compost heaps, manures, straw, debris from hollow trees, fungi, soil, and, indeed, almost any conceivable organic material. Unusual situations, such as pocket-gopher burrows and chambers, subterranean fungus gardens of tropical leaf-cutting ants, and the large twiggy nests of pack rats, often produce very unusual kinds of minute insects that are restricted to these special habitats.

The total number of individual insects in some of these situations is almost incredible. Ivar Trägårdh, of Sweden, recorded an average of 120,000, and a maximum of 282,500 Collembola, or springtails, per square meter in the 2–5-inch layer of dead leaves and twigs on the floor of a spruce forest in southern Sweden.

HOW INSECT FUNNEL WORKS

The piece of equipment that Trägårdh used in making his collection of minute animals from the forest floor was the insect funnel, first developed by the great Italian entomologist Berlese in 1905 and now usually named for him. Berlese, in a simple but ingenious way, made use of a common reaction that insects, living in such situations as soil and leaf-litter, make to conditions of heat and dryness. Under such conditions, the insects tend to burrow downward where it is normally cooler and more moist. Berlese brought samples of leaf-litter and other materials containing tiny insects to the laboratory, placed these on a wire screen in a large funnel, and applied moderate heat to the funnel. As the sample of debris became warm and began to dry at the surface, the insects gradually moved downward through the debris until they passed through the screen and fell into a vial of alcohol placed under the narrow spout of the funnel. The contents of the vial could then be sorted under a microscope and even the most minute of insects could be easily detected. When this method of collecting was first introduced, some very remarkable new types of insects and other invertebrates were discovered.

It is difficult to overestimate the usefulness and importance of this simple device. Not only does it offer us a tool for sampling various niches in nature for the kinds of minute insects and other animals that they support, but it permits us to obtain information on the numbers of each kind of animal in these situations. This last information is especially important for understanding the complex food-webs by which animals are bound together in an interdependent system in nature.

One limitation of the Berlese funnel in the past was the dependence on a heat source (hot water or electricity) and the length of time, sometimes a week, that was required to drive the insects into the vial of alcohol under the funnel. This, in general, limited the use of the funnels to a more or less permanent laboratory setup. Resident entomologists could bring samples of material from the immediate area to the laboratory for analysis, but traveling entomologists, on field trips and expeditions, were hampered in their search for minute insects.

PROBLEM SOLVED

Recently it has been found that naphthalene flakes (the substance in moth balls) can be substituted for the heating and slow-drying method. The flakes are sprinkled on top of the debris sample in the funnel and the irritating fumes gradually work down through the debris and drive the insects down just as effectively as does the heat and a good deal more rapidly. This development makes the funnel much more portable and much more practical for use on expeditions and field trips away from laboratories and bases.

In much of the world, there are no resident entomologists. A knowledge of the insects of these parts depends on collections made by entomologists traveling under museum, university, and other auspices. The development of a portable Berlese funnel will enable these entomologists to learn much more about the lower part of the size-spectrum of the insect world than has been possible before.

A GEOGRAPHICAL MYTH ABOUT MEXICO

For more than a hundred years the public was kept in a state of suspense over the alleged Chinese discovery of Mexico in the fifth century. The idea is pure fiction but was given credence through the deductions of De Guignes in the 18th century from the Chinese account of a marvelous island called Fu-sang. Fu-sang is not a real country but a product of the imagination, a geographical myth pieced together by Buddhist monks from many different sources. Whatever Chinese influences may be found in the indigenous cultures of America are not the result of a migration of individuals or a direct transmission of cultural ideas from China or Japan across the Pacific but have gradually filtered in over the land route through intertribal communication from northeastern Asia down our Northwest Coast.

DALLWIG SUNDAY LECTURES BEGIN IN NOVEMBER

The Dallwig lectures on Sunday afternoons will begin again in November. This autumnal announcement is always welcome to thousands of Chicagoans who have become "fans" of Paul G. Dallwig, the Layman Lecturer, who in twelve seasons of appearances at Chicago Natural History Museum has achieved an enviable popularity. His special facility in interpreting scientific subjects in nonpedantic terms, observing all the requirements for strict accuracy but with charming humor throughout, has been acclaimed in newspapers and magazines. His Museum lectures have drawn so much attention that in addition to a busy season here he is called upon each year to make many out-of-town appearances.

Paul G. Dallwig

Mr. Dallwig will open his thirteenth season at the Museum with "Mysterious 'Night-Riders' of the Sky," to be given at 2 P.M. each of the five Sundays in November (November 2, 9, 16, 23, and 30). Always keeping up to date, Mr. Dallwig will include a discussion of the current mystery of flying saucers. He will dramatize the possibilities of a trip to the moon by atom-propelled rockets and describe the strange phenomena that space travelers would find after arrival on Earth's satellite. Comets, meteors, and meteorites will also be discussed.

The title of Mr. Dallwig's lectures on Sundays in December will be "Money Does Grow on Trees"; in January, "Life—What Is It?"; in March, "A Museum Zoo Is Exciting Too"; and in April, "Living Races and Their Way of Life" (February is omitted because Mr. Dallwig will be on an out-of-town lecture tour that month). Lectures are given partly in the lecture hall and partly in the exhibition halls containing collections pertinent to the subjects.

Members of the Museum may use their membership cards to attend these lectures without advance reservations. All others, with the exception of accredited representatives of the press, must make reservations in advance. Reservations may be made by mail or telephone (WAbash 2-9410). The lectures are free. They start promptly at 2 P.M. and end at 4:30 P.M., including a half-hour intermission for relaxation or for tea or coffee in the Museum cafeteria, where smoking is permitted.

MEMORANDUM: Museum Members' Night, Friday, October 10, 7 to 10:30 p.m.

PLEASE NOTIFY MUSEUM IF YOU'RE MOVING

Members of the Museum who change residence are urged to notify the Museum so that the BULLETIN and other communications may reach them promptly.

A card for this purpose is enclosed with this issue.

Members going away for extended periods may have Museum matter sent to their temporary addresses.

GIFTS TO THE MUSEUM IN PAST MONTH

Following is a list of the principal gifts received during the past month:

Department of Anthropology:

Mrs. F. W. Geisler, Chicago—ethnological material, Sumatra

Department of Botany:

Santa Barbara Botanic Garden, Santa Barbara, Calif.—70 herbarium specimens of oaks, Mexico; Archie F. Wilson, Flossmoor, Ill.—48 phanerogams, Florida; Floyd A. Swink, Chicago—225 phanerogams, Indiana and Illinois; Bailey Hortorium, Ithaca, N. Y. —a Roystonea Dunlapiana, Honduras

Department of Geology:

Dr. Charles A. Reed, Chicago—a collection of fossil mammals, Montana; Marshall B. Stam, Salt Lake City, Utah—15 fossil sunfish, 8 fossil minnows, Nevada

Department of Zoology:

Dr. J. A. Ramos, Mayaguez, Puerto Rico —258 lots of fishes representing 105 species, Puerto Rico; Dr. R. L. Fleming, India—318 birdskins, India and Nepal; Harry Hoogstraal, Cairo, Egypt—342 insects and allies, 100 mammals, Egypt; Eduardo Acosta y Lara, Montevideo, Uruguay—3 bats, Uruguay; Chicago Zoological Society, Brookfield, Ill.—a mammal; Lincoln Park Zoo, Chicago—a mammal, South Africa; Bernard Benesh, Burrville, Tenn.—197 insects, chiefly flies and wasps, Tennessee; Richard Janovsky, Lockport, Ill.—an albino mallard drake, Illinois; A. Bognar, Whiting, Ind.—2 birdskins (dowitchers), Indiana; W. E. Eigsti, Hastings, Neb.—2 lots of bird lice, Nebraska; Alan Solem, Oak Park, Ill.—a collection of mollusks (including 2 paratypes), echinoderms, and corals

Library:

From: Karl P. Schmidt, Homewood, Illinois

NEW MEMBERS

The following persons became Museum Members from August 15 to September 11:

Annual Members

Louis F. Cainkar, Mrs. Edwin G. Chenoweth, Dr. Egbert H. Fell, Edward J. Fruchtman, Samuel C. Maragos, M. M. Mathews, Guy E. Reed, Dr. Dale Rold, George I. Rosin, Manuel Rosner, George Spatta, Mrs. W. E. Swanson, Louis Swidler, George T. Weick, Alfred J. Weil, A. F. Yaworski

ILLINOIS AUDUBON SOCIETY OFFERS FIVE LECTURES

A series of five "screen-tour programs" will be presented in the James Simpson Theatre of the Museum by the Illinois Audubon Society. The first is scheduled for Sunday afternoon, October 26, at 2:30 o'clock, when Laurel Reynolds of Piedmont, California, will lecture and show color-films on "Western Discovery." The Reynolds films cover the Pacific Coast from Mexico to Puget Sound. Wildlife shown includes elephant seals, killer whales, shore birds, wild geese, and various kinds of ducks.

The rest of the series will be given in the winter and spring of 1953. On Saturday afternoon, January 3, Howard Cleaves will present "Animals Unaware"; on Saturday, February 28, the title will be "Oddities in Nature" by Walter H. Shackleton; Robert C. Hermes will give "Bonaventure Diary" on Sunday afternoon, March 22; and the series will close on Sunday, April 12, with "From Coast to Crest" by Alexander Sprunt, Jr.

Admission to these lectures is free, and the public is invited. Members of the Museum or of the Illinois Audubon Society are entitled to seats in the reserved section of the theatre upon presentation of their membership cards to the ushers.

"Suicide Pouches"

"Suicide pouches" were carried by Manchu princes of the 18th century whenever they had an audience with the Chinese emperor. Suicide pouches are silken bags in which a supply of arsenic was carried, and one of them was hung over each hip. A prince was not allowed to attend an official audience without wearing them, for they were symbols of loyalty, and in case the wearer should incur the displeasure of the emperor, he was granted the "privilege" of ending his life, on command, at his emperor's feet. This was regarded as a privilege because persons of lower rank in the same predicament would be done away with by the more humiliating processes of the public executioner.

Daily Guide-Lectures

Free guide-lecture tours are offered at 2 P.M. daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

Although there are no tours on Sundays, the Museum is open during the usual visiting hours, 9 A.M. to 5 P.M.

MEMBERS' NIGHT Stage Show will begin at 8:30 p.m.

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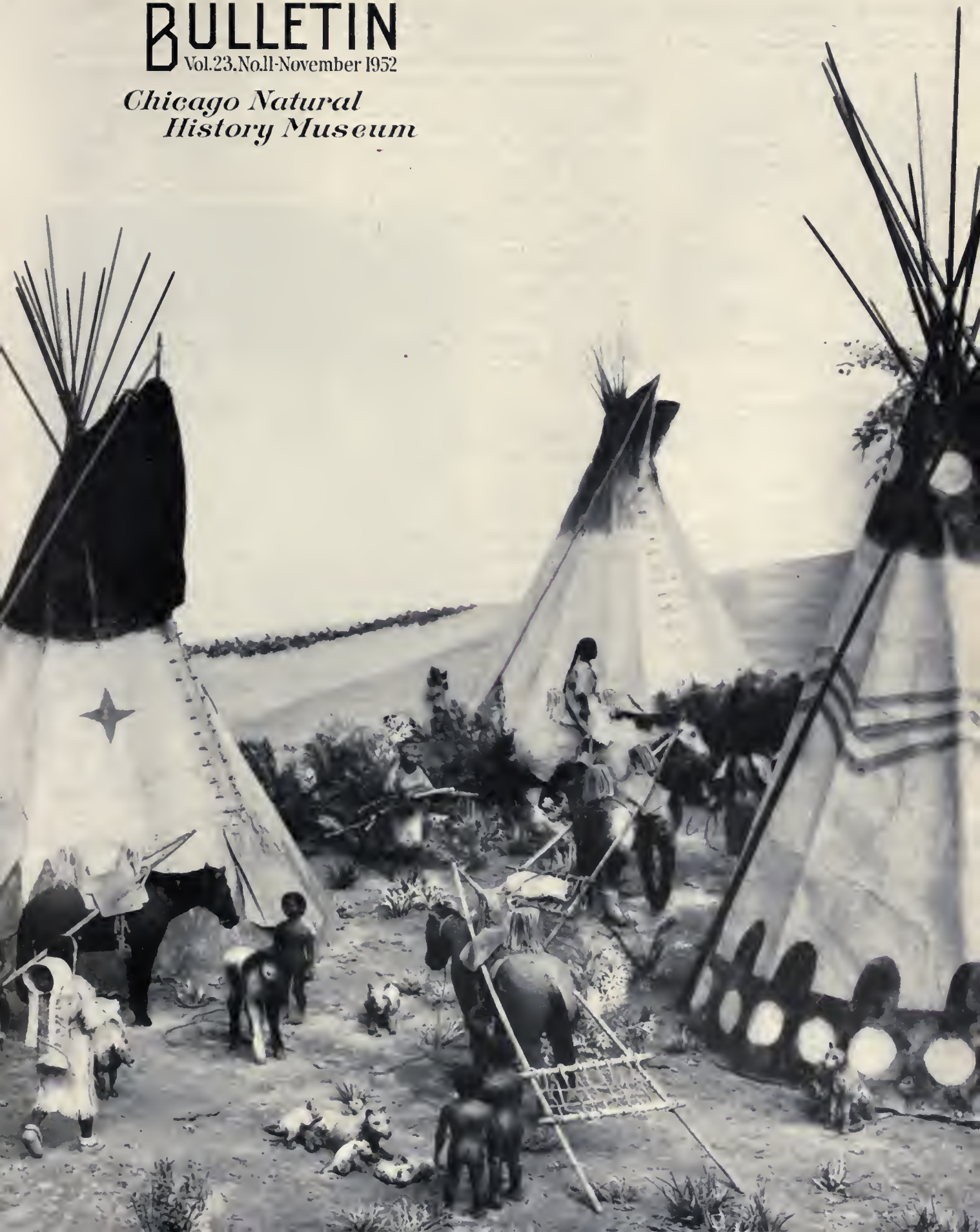
Chicago Natural History Museum



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Members are requested to inform the Museum promptly of changes of address.

1,150 VISIT MUSEUM ON MEMBERS' NIGHT

The response to invitations for the second Museum Members' Night, held October 10, was most gratifying. More than 1,150 Members and guests attended, a considerable increase over the previous year's turnout.

Members' Night is the Museum's means of expressing its appreciation to the thousands of Chicagoans, residents of the city's suburbs and others, who by their memberships help to support this institution. It is designed to link the Members more closely with the institution and its work, to demonstrate what the Museum has done and can do, and to make it clear that the contributions of its Members are a vital factor in its accomplishments.

The prevailing theme of this year's Members' Night was the cultural achievement of our American Indians. This motif was carried out by the preview for Members of the new Hall of the Plains Indians (Hall 6), by the special exhibit of Hopi kachina dolls collected and presented by Byron Harvey III and of Indian dolls on loan from Mrs. Lenore Blanchard Warner, and by the presentation in the James Simpson Theatre of the feature of the evening, "American Indian Style Show." The stage show was under the direction of Frederic H. Douglas, Curator of Native Art at the Denver Art Museum. Thirty-four young women from the Art Institute of Chicago modeled some of the most attractive costumes designed by Indian tribes in all parts of the United States.

Though less spectacular, perhaps the Open House part of Members' Night was more fundamentally allied with the basic purposes of the occasion. Members were invited to visit the scientific laboratories, and the workshops and studios in which exhibits are prepared, and to meet members of the staff—Director, chief curators, taxidermists, artists and other technicians. Some of the Members were conducted in small groups by lecturers of the Raymond Foundation staff. Through demonstrations of what the Museum is doing, and the ways in which it is done, always with strict regard to the most rigid standards of accuracy, the Members were enabled to obtain a better understanding of how a museum fulfills its functions, and of the problems of science and scientific workers.

GIRL SCOUTS BECOME SPECIAL MUSEUM AIDES

Girl Scouts of the Chicago area are busily engaged in the "Nature Study Project" announced in the last issue of the BULLETIN.

A new development is the assignment of about 60 of the girls as Museum aides to assist the staff of the Museum's Raymond Foundation in guidance of the troops of other Girl Scouts who come to the Museum in connection with this project.

On the basis of the knowledge obtained in the Museum halls, the Girl Scouts will write letters on "What We Learned at the Museum About Birds" (or mammals, insects, or flowers, according to the topic a troop selects). These will be submitted to Brook Hill Farms, Inc., of Chicago, whose president, Howard T. Greene, is sponsoring the project. To each of 100 troops judged to have written the best letters, Brook Hill Farms will award a Girl Scout American flag.

Since the opening of the project, its scope has been extended to include the Brownies, youngest class of Girl Scouts, and the Marine Girl Scouts, "seagoing" branch of the organization.

Visit by Museum Directors

Among museum directors who have recently visited Chicago Natural History Museum are: Hugo G. Rodeck, University of Colorado Museum, Boulder; Bradford Washburn, New England Museum of Natural History, Boston; Henry D. Brown, Detroit Historical Society; Mitchell A. Wilder, Colorado Springs Fine Arts Center; Torsten Karl Wilhelm Althin, Teknisha Museet, Stockholm, Sweden, and Dr. J. W. B. van der Stigchel, Museum of Education, The Hague, The Netherlands.

THIS MONTH'S COVER

Part of the diorama of a tent village in the new Hall of the Plains Indians (Hall 6) is shown in our cover picture. The hall, previewed by Museum Members on Members' Night, October 10, is now open to the public. The tents or tipis in which the nomadic Plains Indians lived were made of buffalo skin supported by a conical framework of leaning poles. These tipis and all their other possessions were carried on horses or packed on pole conveyances called travois (shown on cover) that were dragged behind the horses as the tribes moved about the plains in search of buffalo herds. The tipis were set up by the women, who were responsible for the welfare of the village in addition to their own household duties while the men were off hunting.

STAFF NOTES

Dr. Sharat K. Roy, Chief Curator of Geology, has gone to the United States National Museum, Washington, D. C. for several weeks of research on meteorites. . . . **Dr. Theodor Just**, Chief Curator of Botany, **Dr. Julian A. Steyermark**, Curator of the Herbarium, and **Dr. Francis Drouet**, Curator of Cryptogamic Botany, recently attended the annual meetings of the American Institute of Biological Sciences held at Cornell University, Ithaca, New York. Dr. Steyermark has been appointed to the board of governors of the organization known as Nature Conservancy. . . . **Dr. Fritz Haas**, Curator of Lower Invertebrates, has returned from a field trip to Florida where he has been collecting in the vicinity of Boynton Beach, about fifty miles north of Miami . . . The educational work of Chicago Natural History Museum for both children and adults was outlined by **Miss Miriam Wood**, Chief of the Raymond Foundation, for the UNESCO-sponsored international seminar on "The Role of Museums in Education" recently held at the Brooklyn Museum of Arts and Sciences. Her contribution will form part of a report to be made available to museums in member countries of the United Nations. In addition, she served as chairman of the United States delegation.

Fossils Collected

Eugene S. Richardson, Jr., Curator of Fossil Invertebrates, and George Langford, Curator of Fossil Plants, made a field trip in October to localities in Tennessee and Mississippi. They collected in Eocene and Cretacous deposits.

ARCHAEOLOGISTS DIG TONS OF DEBRIS WITHOUT BULLDOZER

By PAUL S. MARTIN
CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

WHY IN THE WORLD would anyone want to move tons of dirt and rocks, especially if such sweaty labor had to be done with only picks, shovels, wheelbarrows, trowels, grapefruit knives, orangesticks, whiskbrooms and NO BULLDOZER?

Well, actually we *did* move over 400 tons of dirt and rock this last summer without benefit of machinery. And what's worse, all that dirt was moved by wheelbarrows, and then sifted and strained—by forcing it through hardware cloth of ⅜-inch mesh.

ANCIENT CAVE DWELLING

Occupied by the Mogollon Indians at least 2,000 years ago, this site, when excavated by the Museum's Southwest Archaeological Expedition last summer, proved to be rich in artifacts that provide clues to a little-known early American culture. During operations here the archaeologists, coming to the dig and returning to camp, each day faced a hazardous one-hour mountain drive, followed by a five-mile hike with equipment packed on their backs. During this trek they had to ford the winding San Francisco River seven times each way.

And we brought home only about a ton of stuff and threw away the other 399 tons. But this stuff is valuable and was well worth the time and effort taken to screen it; for, from this ton of materials, we hope to close a gap—a gap of about 200 years in duration; a gap in the history of the Mogollon Indians that we are putting together piecemeal.

IN THE ELEVENTH CENTURY

About the time that William the Conqueror was invading England (A.D. 1066) a group of Indians in western New Mexico was carrying on its daily routine—building houses, bringing up children, making pottery, planting or harvesting crops, fending off attacks of covetous neighbors and praying for rain.

All this is not fancy, but is a factual statement based on the work of the Southwest Archaeological Expedition for 1952. The Indians about whom I write are called Mogollon (pronounced Mog-ee-yon) since we do not know their own tribal designation. For nine seasons, with pick and shovel, we have been pursuing the history of these Mogollon Indians and have been able to distinguish at least seven distinct, clear-cut periods or eras in their history. This is not the place or time to review these periods in detail because scientific publications on all our archaeological activities in New Mexico as well as several popular accounts of our work have been published (*Scientific American*, July 1951, pages 47–50, and *Archaeology*, March 1952, pages 14–21). Suffice it to say that we now know that the Mogollon Indians occupied the Pine Lawn Valley and adjacent area in and around the town of Reserve in western central New Mexico for some 3,500 years, from about 2500 B.C. to A.D. 1300.

The period or epoch that we chose to investigate during the past season is known as the Reserve Phase and it is tentatively dated at about A.D. 1000 to 1200. We explored an open site as well as caves and cliff-dwellings. We collected tools, clothing and pottery of this period so that we might know more about the daily life, the religion, and the problems of the people of that far-off time.

CAVES EXCAVATED

From previous work in "open sites," we had found out what architectural knowledge the Indians of the Reserve period possessed, and what kinds of pottery and stone tools they manufactured and used; but we knew almost nothing about many other aspects of their life—what kinds of textiles they wove, what footgear and clothing they wore, or what tools and ornaments they made of wood or vegetable fibers. These last named objects are called "perishable" because they would rot away in open sites in the course of time. Therefore, the obvious place to find "perishable" objects is in a dry cave; and in dry caves we dug.

At this point, a word must be said about caves in the Reserve area. First, they are scarce; second, most of them are high up in the mountains and difficult of access; third, many of them are "wet" and therefore of little interest to us; and fourth, some of them had been thoroughly cleaned out by pot hunters. After making numerous inquiries and after arduous climbing and searching, we finally found four that fitted our specifications and these were dug during the season. In addition to the caves, a large ceremonial structure was excavated.

CLIFF DWELLINGS

Two of the caves contained cliff dwellings or masonry-walled houses built within the shelter of the cave. One cliff house, overlooking the Blue River, consisted of two rooms and was crudely constructed. The other, located high up in the mountains and screened from the eyes of the unobservant by a dense growth of pine trees, was well constructed and in amazingly good condition. The walls were still standing to a height of 10 feet, were smooth, and well constructed. After excavation, we found that some portions of this cliff-apartment-house contained two stories and that there were 11 rooms altogether. The ceiling of the first story (and therefore, the floor of the second story) was perfectly preserved. It was composed of several beams, about 5 inches in diameter, across which were laid (close together) wooden splints and cedar bark, all of which was topped by a 5-inch layer of adobe. This type of roof-ceiling was common in many parts of the Southwest; but this is the first example of such a roof that we have found. In fact, this cliff house is the first and only one of the Mogollon culture that has ever been scientifically excavated! We shall send a portion of one of the beams to the Tree Ring laboratory in Tucson in the hope that it can be dated. Our conjectural date for this structure is about A.D. 1050.

All told, about 1,500 items were recovered from the caves. I should like to name a few: bows, arrows, portions of matting and basketry, sandals, wooden digging-sticks, cigarettes, painted wooden objects (*tablitas*) that were worn in ceremonial dances, grinding stones, tools of bone, arrow points, and pottery. In addition, we recovered bean pods, corn and corn cobs, nuts, squash rinds, sunflower heads, and animal bones (rabbit, mountain sheep, deer, squirrel, turkey, etc.).

No mummies were found this year, but we did make a few choice discoveries: a cache of planting sticks and sandals carefully laid away and forgotten on a ledge in the back

of the cave; a large twill-plaited mat of rushes, a rabbit net of great length (it is so fragile that we have not yet dared to unfold all of it) and a cache of five beautifully chipped knife blades of basalt.

FRAGILE ARTIFACTS

Since these artifacts are more than 800 years old, some of them are fragile and must be treated with tender care. In excavating such specimens, we used a camel's hair brush, and a tire pump for blowing away the dust. The rabbit net that I mentioned was cleaned off in this manner and was then sprayed with a plastic solution which served to bind the parts together and to strengthen the whole so that we could carry it back to camp.

Excavating caves is difficult at best, for if they are dry, the dust is indescribably fine, easily disturbed, and is almost volatile. Therefore masks and goggles had to be worn at all times during actual digging. Light was furnished by large, portable, chargeable battery lamps. But, digging in caves has many rewards. Since the dusty refuse contains so many well-preserved household and utilitarian objects, one feels as though he were walking into a deserted house and finding the cast-off, forgotten, or hidden objects left behind and undisturbed for eight centuries or more.

Since the materials have not yet been analyzed we cannot announce final details at this time. But, when the detailed work has been accomplished, we may have answers to many of the questions that now confront us. All of these questions might briefly be summed up in two major queries: (1) How did the Mogollon Indians solve their problems of daily life? (2) What caused them to progress?

A CEREMONIAL STRUCTURE

In addition to the four caves, we also excavated part of a surface building and a nearby large, rectangular structure that was probably used for religious and ceremonial purposes. Few buildings of this type are known in the Southwest, and because of its rarity we decided to dig it. The building measures 28 feet by 32 feet and is 4 feet deep. The job of clearing the trees, rocks, and dirt (about 200 tons in all!) from this building, and all by means of pick, shovel, and wheelbarrow, was a major undertaking and required the efforts of six people for the season.

We called this ceremonial structure a "kiva," a Hopi Indian word that is applied to this type of building. The entrance to our kiva was extraordinarily large. Usually, kivas were entered through a hatchway in the roof. Our kiva entrance, however, was a long (30 feet) ramp, broad enough to accommodate passage of a truck; and it sloped gently upwards from the sunken kiva floor (4 feet below the surface) to the outer ground level.

We discovered that we had not just one kiva, but two! The earlier structure was about the same size as the later one; and was also subterranean, since the same floor level served both the earlier and the later structures. The walls of the earlier building, however, had been composed of upright posts set about 6 inches apart and the interstices filled with branches and mud. We call this type of wall construction "Jacal" or "wattle and daub." The earlier building probably burned.

CHANGE TO MASONRY

The elders then decided to use stone for their walls and accordingly walls of masonry —fairly crude to be sure—were erected. It was these stone walls, of course, that we uncovered when we excavated the kiva. After all excavations, mapping, and photography had been finished, we took a peek behind the masonry and found there evidence of the earlier wattle and daub construction.

The nearby surface village probably contains ten or twelve rooms. We had time to excavate only two of these. But the data thus gathered make us feel fairly certain that the surface rooms and the kiva made up a village unit and that both were built by the same people at about the same time.

The pottery from the kiva, curiously enough, is not all of local origin. Much of it came from villages to the south—perhaps 100 miles off. This we do not yet understand.

Most of the pottery that we found was broken but one superb piece, perfectly preserved and whole, was recovered. The shape of this piece is rare; it is a representation of a duck, white in color on which was painted a decoration in black paint. On the breast of the duck one finds realistic, wavy lines that immediately suggest water; and on the sides are other lines that represent feathers. To make this duck-effigy a utilitarian piece, the potter chose to omit the head, and in its place created an orifice into and out of which liquids could be poured. On the back is a convenient handle. Thus, we have in effect, a duck-effigy pitcher.

This piece is unique in our excavated collections and is, indeed, highly prized. Since it was found near the kiva, and since ducks are associated with water, we conjecture that this pitcher may have been used for pouring libations to the rain-gods; for in that country rainfall was, and still is, always scarce; and more rainfall was, and is, constantly desired by farmers.

COMPLETELY EXCAVATED CLIFF HOUSE

This stronghold high up on the side of a remote mountain is the first scientifically dug-out cliff house of the Mogollon culture. It dates to about A.D. 1050, and is notable for its defensible situation. The natural protective features were augmented by others constructed by the isolated inhabitants, in apparent fear of enemies.

When all the details are worked out, after charts and tables have been constructed, and after arguments, conjectures, and meditations have been indulged in, then—and only then—shall we have a fairly clear idea of how the Mogollon Indians of about A.D. 1100 ate, worked, prayed, and thought.

The year 1952 marks the ninth season for the Southwest Archaeological Expedition in New Mexico. As we look back at the staggering amount of work accomplished, my colleagues, Dr. John Rinaldo, and Miss Elaine Bluhm, and I are happy to thank the people who helped us: Robert Adams, Thomas P. Alder, Vivian Broman, W. T. Egan, Wayne Gaines, E. D. Hester, Marjorie Kelly, David Mabon, Martha Perry, Alain Petit, Michael Snyder, and Wayne Spurgeon.

SATURDAY LECTURE COURSE CONTINUES IN NOVEMBER

Saturday afternoon lectures on travel and science for adults will continue throughout November. They are presented at 2:30 o'clock in the James Simpson Theatre of the Museum. Limited accommodations make it necessary to restrict admission to adults; for children, special free motion pictures will be presented on the mornings of the same Saturdays by the Raymond Foundation.

Following are the dates, titles and lecturers for the five remaining offerings in the series:

November 1—REALM OF THE WILD
A. Tyler Hull

November 8—EXPLORING THE EVERGLADES
Murl Deusing

November 15—THE TROUBLED MIDDLE EAST
Colonel Homer F. Kellems

November 22—EGYPT—A VOYAGE INTO THE PAST
Ray Garner

November 29—GUATEMALA
Clifford J. Kamen

No tickets are necessary for admission to these lectures. A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats. Requests for these seats should be made in advance by telephone (WAbash 2-9410) or in writing, and seats will be held in the Member's name until 2:25 o'clock on the lecture day.

DALLWIG SUNDAY LECTURES ON 'SKY NIGHT RIDERS'

Paul G. Dallwig, the Layman Lecturer, will open his 1952–53 season of Sunday afternoon lectures at the Museum in November. His subject is "Mysterious 'Night-Riders' of the Sky," to be given November 2, 9, 16, 23 and 30.

Keeping abreast of developments in current news, Mr. Dallwig will include a discussion of the "flying saucer" mystery.

Recently there has also been, especially since the establishment of radar contact with the moon, a rash of speculation in the press and elsewhere about the possibility of travel by atomic-power-propelled rockets to the moon. There have been hints that this is not only a possibility but that it may occur in the quite near future. Mr. Dallwig's lecture includes a dramatized preview of what could be expected on such a journey.

Mr. Dallwig will explain also the difference between comets, meteors and meteorites.

On the four Sundays in December Mr. Dallwig's lecture topic will be "Money *Does* Grow on Trees," the story of forestry and the lumber industry.

Members of the Museum may use their membership cards to attend these lectures without advance reservations. All others, with the exception of accredited representatives of the press, must make reservations in advance. Reservations may be made by mail or telephone (WAbash 2-9410). The lectures are free. They start promptly at 2 P.M. and end at 4:30 P.M., including a half-hour intermission for relaxation or for tea or coffee in the Museum cafeteria, where smoking is permitted.

Daily Guide-Lectures

Free guide-lecture tours are offered at 2 P.M. daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

Although there are no tours on Sundays, the Museum is open from 9 A.M. to 5 P.M. (4 P.M. on weekdays).

LIFE IN LIBERIA: PICTURE STORY OF A NATION

"Life in Liberia," the picture-story of the West African republic founded in 1822 by freed Negro slaves from the United States, will be featured in a special exhibit in Stanley Field Hall of the Museum from November 14 to December 15. The exhibit is composed of more than 50 large photographs made by Griff Davis, well-known photographer for the Black Star Publishing Company of New York, on several trips he has made to Liberia in the last three years. Mr. Davis is at present an information officer assigned to the State Department's "Point IV" program in the African republic.

The pictures in the special exhibit show the transition that has taken place in Liberia as the old African customs have gradually yielded to more modern ways of living, largely as a result of influences from America. They have been selected as the very best from some 5,000 negatives made by Mr. Davis. The President of Liberia, William V. S. Tubman, gave his backing to the picture-taking project, but left the selection of material entirely to the photographer. The exhibit recently was shown at the American Museum of Natural History in New York.

In area, Liberia is just about the size of Ohio, or three times the size of Switzerland. There have been close ties between the little republic and the United States ever since its founding when the first band of settlers landed at Providence Island in the harbor of Monrovia. Although the major part of the country is still primitive and sparsely populated (about 2,500,000), the Liberian government, with help from America and the United Nations, is steadily developing its potential human and natural resources. It is only within recent years that the varied groups inhabiting the country have put aside their tribal and ancestral differences to work together toward a national citizenship.

Liberia is of interest both because of the unique factors that brought it into being and because of the progress that is being made today. One of the things that is responsible for economic and social advances in the country is the fact that its government maintains some 300 students in American universities and colleges to learn technical skills needed in the nation's projects. Already Liberia is supplying the western world with rubber and iron ore of high quality, and during World War II it was of great strategic importance to the Allies.

AN EXAMPLE OF EFFICIENCY

In the community wash stream of a Liberian village a girl combines in one operation her personal bath and the laundering of her clothes. This is one of more than fifty "Life in Liberia" photographs by Griff Davis that will be shown in a special exhibit in Stanley Field Hall of the Museum from November 14 to December 15. Mr. Davis is a U. S. State Department official.

SONG BIRDS OF WORLD IN EXHIBIT SHOWING RELATIONSHIP

By AUSTIN L. RAND
CURATOR OF BIRDS

METALLIC-HUED SUNBIRDS, gaudy tanagers, and brightly colored weaver birds, as well as duller sparrows, grackles, and starlings, a huia from New Zealand, a pepper shrike from South America, and a chipping sparrow from near home are among the song birds that ornament the latest addition to our bird exhibits in Hall 21. Not only does this addition augment our series of displays, but several new features make it a distinct advance in our method of exhibition.

EXHIBIT OF SONG BIRDS INSTALLED IN 1952

The arrangement is by families or family groups, with closest relatives together. Uniform poses facilitate comparisons. The perches reduced to a minimum lessen distracting elements. Supplementary material adds information and relieves the monotony of rows of specimens.

This new case is part of our "Birds of the World" exhibit, already partly installed. When the exhibit is completed, some ten cases will show in synoptic series the variation in the bird world, from ostrich to oriole—the range in size, form, color, and pattern. Only a small part of the 9,000 or so bird species that exist can be shown, so that those exhibited were chosen with care.

SYSTEMATIC ARRANGEMENT

The birds in the exhibit are in systematic order with various groups of birds segregated on rectangular raised panels or plaques. This arrangement into groups puts the nearest relatives together. The main purpose of a synoptic series of birds of the world is to show not only the diversity and variation in birds but also the arrangement into order. In classification the species or kinds of birds are arranged for convenience into groups according to their affinities; genera contain closely related species; families, closely related genera; and orders, closely related families; all in the class aves (or birds).

Each family is to be represented, the family being chosen as our basic unit, partly because popular knowledge has recognized families by giving them vernacular names, like shrikes, sparrows, warblers, tanagers, etc., and partly because it is a convenient unit.

The identity, as to species, of each bird is unimportant in this exhibit. For example, in the present exhibit the bull-finch, the snow bunting, and the crossbill are not there as such but are placed in the group of twelve species to show variation in form and color in the sparrow family (Fringillidae). On the same plaque we have also placed, in an adjacent group, the weaver birds of the Old World (family Ploceidae) and the single representative of the South American plush-capped finches (family Catamblyrhynchidae) that all are at least superficially similar in having a conical bill adapted for seed eating; and the whole plaque is headed "Seed Eaters." This is also evident in the plaque above, headed "Old World Flower and Fruit Eaters," where four related families are shown: the metallic plumaged sunbirds (family Nectarinidae) with elongated bills for flower probing; the honey eaters (family Meliphagidae) of the Australian area, many with similar bills; the stubby-billed flower peckers (family Dicaeidae); and white-eyes (family Zosteropidae).

DIVERSITY EMPHASIZED

The number of individuals of a family shown usually bears a relation to the number of species and the diversity of their appearance. The American blackbirds (family Icteridae), with meadowlarks, grackles, orioles, redwings, etc., in all eight species shown occupies a whole plaque. The shrikes (family Laniidae), with six species shown, also have a plaque to themselves. But just below the shrikes is a small plaque of "Shrike Allies" on which six smaller families—wood shrikes, vangas, wood swallows, pepper shrikes, vireo shrikes, and vireos—are shown by only eight birds. Though the bird family is stressed in this exhibit, we've not ignored the student who may want to know the identity of the species represented. We give beside each family group a list of species with a corresponding letter beside the bird.

The main purpose of a synoptic series of birds is to show birds, and birds should predominate. To reduce the conspicuousness of the perches we thought of making them of transparent plastic or of wiring the birds in place so that their attachment would be practically invisible. But our Museum experience ruled against that. If an obvious but unobtrusive perch is used, the Museum visitor recognizes it and dismisses it from his mind, going on to examine the exhibit. But if no obvious support is to be seen, many a visitor, especially younger ones, set out to solve the mystery, as we've seen them looking for the fine, almost invisible wires that support a flying bird.

So we made the perches mere pegs and painted them the same color as the background. They are there to see, but they are unobtrusive, and we're pleased with the result—a clean, uncluttered case with the birds the things that catch the eye.

The birds in each group are mounted in similar attitudes, facing the same way. This and the reduction of the size of the perches make it possible to group the birds close together, facilitating comparison.

SOME NESTS INCLUDED

We've used some accessories in this exhibit for several reasons. One of course is to tell something about the family. The typical basket-like vireo nest is shown and the cup-nest of the tanagers. There are sketches of the great variety of nests of the American blackbirds, from pendant sac-like structures slung from the tips of branches to nests hidden on the ground. Another sketch shows a weaver bird tying a knot, as these species do in weaving their retort-shaped nests, and another shows starlings, called oxpeckers, climbing about on a cow looking for their usual food of ticks. Another reason, equally powerful, for using accessories was to break up monotony. A uniform exhibit of birds seems to cause fewer visitors to stop and look than does one interrupted with the other related objects. But the accessories, the lists, the group name, and the birds are all arranged so that they form part of the appropriate group.

To a casual glance at a distance, the exhibit presents order and an attractive design. A closer inspection shows that each group in the design represents closely re-

lated birds. A student can quickly get an idea of the "spread" of a family without reading more than the name at the head of the group. If he wants to go farther, the list of species is there; and at the bottom of the case are short write-ups of each family, with the geographical distribution of each family marked on a map.

INSTALLATION TYPICAL OF EARLIER TECHNIQUE

A panel of birds as it was installed in the same hall (Systematic Birds, Hall 21) in the 1930's.

To appreciate the advance in exhibition technique, one should compare this new case with earlier ones. The old-time exhibits of the early days of our Museum displayed the birds mounted on polished mahogany T-stands. The richly colored wood was beautiful in itself but it detracted from rather than added to the birds. These T-stands gradually lost popularity, and natural branches became popular as perches for birds on exhibition. Sometimes twigs and leaves and even grass were added. This had a great advantage in showing something about the bird, suggesting the kind of place in which it lived. Often each individual bird, with its accessories, was beautiful in itself. But when many different ones were placed side by side in one big case, the over-all effect was confusing. The first impression was of a case filled with tips of branches, sticks, leaves, and grass, with some birds amongst them.

The birds on the old-time mahogany stands were, of course, placed in rows on shelves, sometimes of glass to reduce shadows. This had the advantage of system, but in quantity it was depressing and made the survey of a group more difficult. The arrangement when bits of habitat were used, fastened directly to the background, was usually to scatter the birds uniformly over the case. No pattern emerged, and each individual bird had equal emphasis. Comparison was more difficult. The birds were mounted in many different poses, each a triumph of taxidermy in itself. But when placed near each other, the birds offset each other's attractiveness. Comparisons, too, were more difficult with different poses.

OLD-FASHIONED INSTALLATION

A peek into part of the same bird hall (Systematic Birds, Hall 21) as it appeared in the 1920's.

By systematizing and grouping in our bird arrangement, reducing extraneous perch material, and adding supplementary explanatory material, we've increased the educational value and the attractiveness of the exhibit. We've used both science and art. It's to convey information. As such, the main theme is scientific, with arrangements that show variation and relation. But we've used artistry in arrangement to make the exhibit as pleasing and attractive as possible.

After the new case is installed we will continue to check to see how it is being received by our clientele—find how many people look at it and perhaps overhear what they say. But we also have a little-known automatic recorder of the attention each case gets. When people are interested in a case they tend to point with their fingers and touch the glass. Children particularly crowd closer and press their noses against the glass. Each leaves a print on the polished glass. By looking, at the end of a day, at the number of finger and nose prints on the glass we can get an idea of the relative attractiveness of various exhibits.

The synoptic series of birds of the world, of which this exhibit forms a part, has the earlier or more primitive families already installed, from ostriches, penguins, and albatrosses to pheasants and parrots. There still remain five or six cases to install showing the rest of the perching birds, climbing birds, cuckoos, swifts, owls, and their relatives before our aim of a survey of the bird world is completed.

Sometimes we hear this series referred to as the foreign or exotic bird series in contrast with the American series across the hall where all American species are shown. But we don't like the designation. The new exhibit contains exotics, it is true, whether

(*Continued on page 8, column 2*)

AFRICAN BIRDS BROUGHT IN BY BUCHEN EXPEDITION

The ornithological expedition to East Africa, sponsored and led by Walther Buchen of Winnetka, Illinois, has completed its collecting with notable success, and Mr. and Mrs. Buchen have returned home. Most of the specimens have arrived at the Museum. Work has already begun on preparation of the habitat group representing a papyrus

MISSION ACCOMPLISHED

Members of East African Expedition triumphantly gather around first specimen of whalehead stork obtained for Museum's projected papyrus-marsh bird group. Left to right: Walther Buchen, sponsor and leader of the expedition; Mrs. Buchen; a native boatman, and John Williams, ornithologist.

marsh with its teeming bird inhabitants. The assemblage of material for this group was the primary objective of the expedition.

Mr. and Mrs. Buchen flew to Nairobi in Kenya Colony early in May. There they recruited a British ornithologist to accompany them, and organized a safari to hunt birds in the upper Nile region in Uganda. The entire summer was spent in the field.

The papyrus marsh ecological group will be dominated by specimens, collected by the Buchens, of the large and grotesque whale-headed stork and a group of crowned cranes. Other birds in the group will include pelicans, cormorants, water-hens, herons, plovers, and a great variety of ducks. Preparation of the group will require several months, at least. Museum artists and taxidermists will be guided by photographs and color sketches made by members of the expedition.

GIFTS TO THE MUSEUM IN PAST MONTH

Following is a list of the principal gifts received during the past month:

Department of Anthropology:

Byron Harvey III, Chicago—50 Hopi kachina dolls, 22 baskets and 15 miscellaneous ceremonial objects, various Hopi villages, Arizona; W. T. Knapp, Chicago—9 pieces of Pueblo pottery and a string of bell jingles (Navajo), Rio Grande Pueblos, New Mexico

Department of Botany:

Dr. W. H. Hodge, Beltsville, Md.—18 Peruvian phanerogams, Peru; Floyd Swink, Chicago—72 phanerogams, Illinois and Indiana; Escuela Agricola Panamericana, Tegucigalpa, Honduras—a pentaplaris, Honduras.

Department of Geology:

Jon S. Whitfield, Evanston, Ill.—26 fossil fishes, Eocene, Wyoming; Joseph N. Beck, Ramsen, Iowa—a hair ball, Iowa; John H. Alexander, Colorado Springs, Colo.—a topaz crystal, a microcline and a smoky quartz, Pikes Peak, Colorado.

Department of Zoology:

Chicago Zoological Society, Brookfield, Ill.—an aardvark, a South American tortoise and an alligator; Ralph M. Eiseman, Chicago—2 frogs, Indiana; U. S. Fish and Wildlife Service, Pascagoula, Miss.—52 lots of fishes, Gulf of Mexico; Instituto de Zoologia, Portugal—99 mammals, Portuguese West Africa; Dr. Rainer Zangerl, Chicago—a snake, Austria; Eugene Ray, Chicago—41 Mordellid beetles, Africa, Asia, Europe; A. Wolffson, British Honduras—4 lizards, 3 snakes, and 5 turtles, British Honduras; Harry Hoogstraal, Cairo, Egypt—7 birdskins, Egypt; Harold A. Dundee, Lawrence, Kan.—a snake, Texas.

SONG BIRDS—

(*Continued from page 7*)

we use the term simply as contrasted with the word "domestic" to indicate coming from a foreign land or in the sense implying "strangely beautiful and brilliant." We have such birds in the case. But we also have domestic birds—birds from the Chicago area, like the chipping sparrow. The series is of birds—without qualification. To bring out that fact we label it a synoptic series of birds of the world, for it's certainly that if anything.

This exhibit was designed by the Division of Birds. Taxidermy is by Carl W. Cotton, art work is by Douglas E. Tibbitts, and maps are by Margaret G. Bradbury.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

The first publication from the Museum's notable work on the fresh-water fishes of Mexico appeared in 1902 as *A Contribution to the Ichthyology of Mexico*, by S. E. Meek. Dr. Meek was the first ichthyologist to collect in many of the more important Mexican rivers, in some of which every species obtained was new to science.

In the fall of the same year Dr. Meek lectured to the Museum members on "The Fishes of Mexico—A Study in Geographical Distribution."

William J. Gerhard gave an illustrated lecture on "Insects of Southern Peru and Bolivia" based on his own field work some years previously.

FIVE MOVIES FOR CHILDREN ON NOVEMBER SATURDAYS

Of the autumn series of free motion-picture programs for children, five remain to be given on Saturday mornings in November. The programs are presented under the auspices of the James Nelson and Anna Louise Raymond Foundation. They begin at 10:30 A.M. and are given in the James Simpson Theatre of the Museum. No tickets are needed. Following are the remaining programs:

November 1—GETTING READY FOR WINTER
Also a cartoon

November 8—EXPLORING THE EVERGLADES
Story by Murl Deusing

November 15—INDIA
Also a cartoon

November 22—YOUR FAVORITE ANIMAL MOVIES
Also a cartoon

November 29—ANIMAL LEGENDS
Also a cartoon

Geology Expedition Returns

Robert K. Wyant, Curator of Economic Geology, has returned from a successful collecting trip in Utah and Colorado. In addition to obtaining needed ores and rock specimens from various mining localities, several pegmatite minerals were collected.

Visiting Hours Change

Museum hours, which have been 9 A.M. to 5 P.M. in the autumn, change to the winter schedule, 9 A.M. to 4 P.M., November 1 to February 28.

NEW MEMBERS

The following persons became Museum Members from September 12 to October 13:

Contributor

Byron Harvey III

Associate Members

Miss Shirley Conklin, Lyman R. Kirst

Annual Members

J. D. Acosta, Charles F. Biersborn, Frederick H. Bird, Charles C. Blish, Mrs. Oma M. Bradley, Robert Y. Bradshaw, Keith T. Campbell, Dr. Charles B. Congdon, Robert C. Cross, George H. Dapples, Frank O. Frisk, Alfred E. Gebhardt, Miss Alice Hamilton, David E. Henkle, Miss Ruth L. Hoffmann, J. C. Houston, Jr., M. G. Jackson, E. T. Kurzdorfer, Mrs. James D. Kysor, Max Lubig, C. F. McConnell, C. Bouton McDougal, Dr. Michael R. Mizen, Jules Montenier, Richard B. Rush, Vincent D. Sill, Donald Stanley, Harold I. Stickler, John E. Stipp, Fred W. Strassheim, Miss Virginia Terhune, H. Hoyt Thompson, Mrs. Carl H. Weil, North Western

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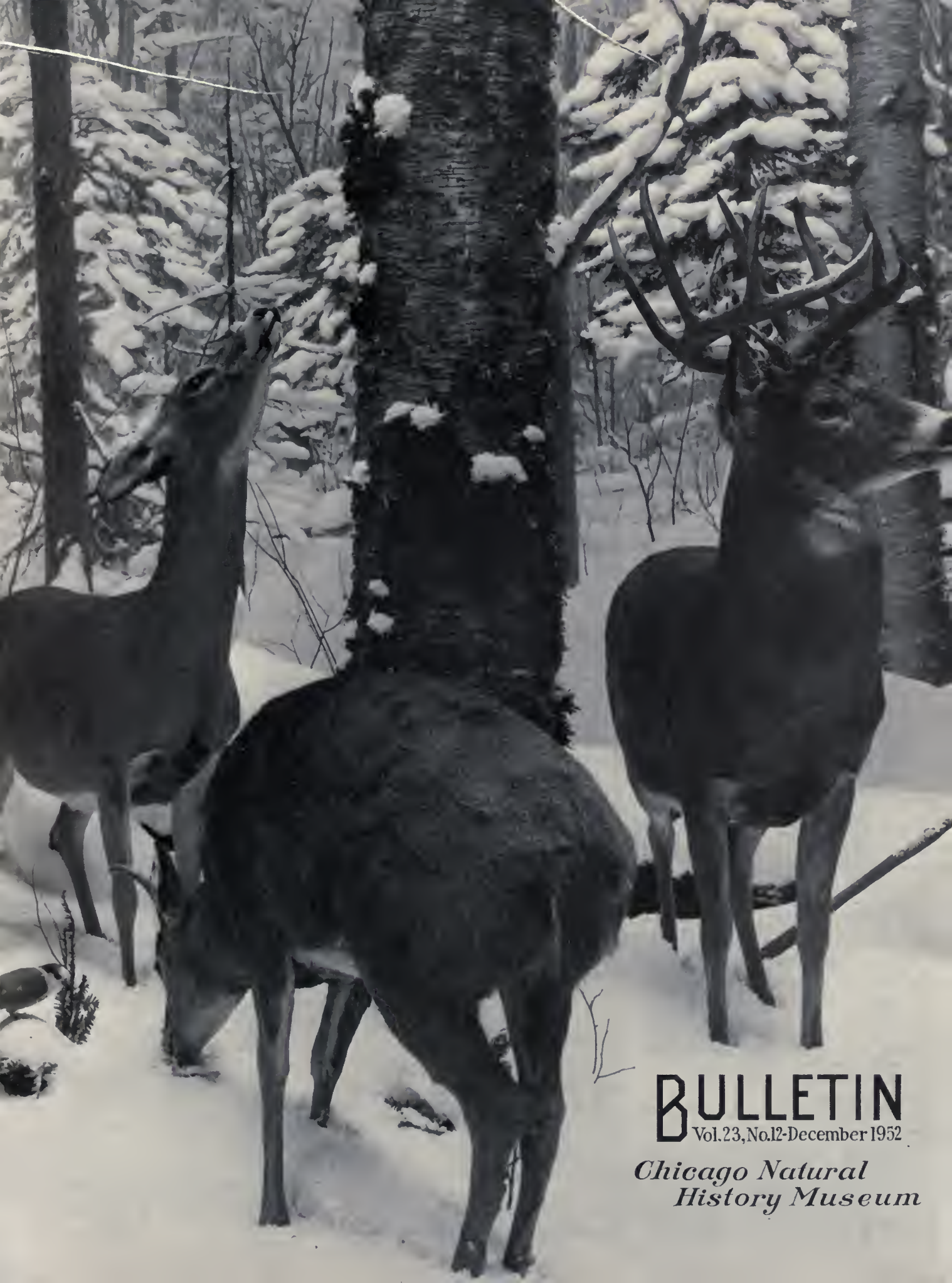

BULLETIN

Vol. 23, No. 12-December 1952

Chicago Natural History Museum

Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

LEOPOLD E. BLOCK, 1869–1952

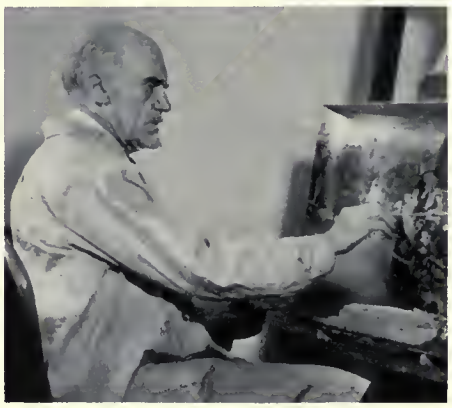
Chicago Natural History Museum suffered a distinct loss in the death on November 11 of Leopold E. Block, a member of its Board of Trustees. Mr. Block was 83 years old. He was one of the founders of Inland Steel Company, and in its early days was vice-president and treasurer. From 1919 to 1940 he was chairman of the company's board of directors, from 1940 to the end of 1951 he was chairman of its finance committee, and in January of this year he became honorary chairman of the board. Other business connections included directorships of the First National Bank of Chicago and the Commonwealth Edison Company. He was honorary vice-president of the American Iron and Steel Institute, which he had served for many years as a director.

Leopold E. Block

Mr. Block was elected a Trustee of the Museum in December, 1936. Since that time his counsel had been a valuable asset to the administration of the institution, especially in his capacity as member of the important finance committee. He was both a Corporate Member and a Life Member of the Museum.

JOHN CONRAD HANSEN, 1869–1952

If it can ever be said of a man that his life began at 70, then this can be said of John Conrad Hansen, who died on November 12 at the age of 83. In the fall of 1938, when he was 69, Mr. Hansen had completed a lifetime's work, begun when he was 13, as an outstanding lithographer and engraver. But, losing no time, this tenacious though frail man started a new and distinguished career as staff artist and illustrator in the Department of Geology of the Museum.



John Conrad Hansen

Mr. Hansen combined meticulous craftsmanship with an ability to observe minute detail and, though he had no background in scientific work, became an accomplished illustrator of scientific objects, particularly bones. His specialty was pen-and-ink drawings, which betray the elegant technique of the master engraver. A great many of his excellent illustrations have been published in scientific literature, and more remain to appear in future publications. In his later years, Mr. Hansen's eyesight began to fail and he preferred painting to the more exacting pen-and-ink drawing. Many of his paintings are included in exhibits in Frederick J. V. Skiff Hall and Ernest R. Graham Hall (Halls 37 and 38).

Mr. Hansen was born on August 4, 1869, in Trondheim, Norway, and came to this country with his widowed mother, a brother, and three sisters when he was 12. The family settled in Minneapolis, where John Conrad began his apprenticeship.

He was extremely conscientious in his work and loyal to his employers, giving little heed to himself. This is, in part at least, the reason why he never married and why he worked until a month before his death.

RAINER ZANGERL
Curator of Fossil Reptiles

THIS MONTH'S COVER

The scene showing white-tailed deer in their winter phase is one of the "Four Seasons" groups in Richard T. Crane, Jr., Hall. These are among the earliest and best-known habitat groups prepared by the late Carl E. Akeley. During the short autumn deer-hunting season in many states thousands of bucks are shot each year. Deer were an important game animal to the American Indians. They have held their own remarkably well, even against the most intensive hunting. They have been re-introduced in places from which they had been driven out, and, where carefully protected by law, their numbers have increased. With our national and state parks and other refuges, our game laws, and the continuation of intelligent conservation practices, the white-tailed deer should always be with us.

SPECIAL KOREAN EXHIBIT

Because of interest in Korea stimulated by current events, an exhibit of ethnological material from that country will be placed in Stanley Field Hall on December 15. This exhibit, comprising two cases, will remain on exhibition through January 31. The material shown is varied. It includes clothing, embroideries, household goods, musical instruments, charms, and jade ornaments.

NEW MEMBERS

The following persons became Museum Members from October 14 to November 13:

Associate Members

Richard H. Dix, L. B. Kidwell, Miss Erna Schwandt, Gustavus F. Swift, Jr.

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Ralph C. Archer, Mrs. Maurice H. Bent, Mrs. G. L. Bergen, Maurice H. Bronner, Beckwith R. Bronson, E. A. Bronson, James W. Cotter, Hugo Coutandin, Mrs. Douglas Craycraft, Dr. Roland R. Cross, Jr., Seymour S. Cunningham, Frederick H. Deknatel II, Calvin Fentress, Jr., Dr. Charles A. Ford, Mrs. Ernest A. Gebhardt, Mrs. Evelyn M. Gebhardt, Franklin T. Griffin, F. A. Hohenadel, John M. Lavezzorio, Charles J. Leonard, Mrs. Isabel Catharine Lesch, Harry F. McCombs, Thomas C. McConnell, David B. McDougal, Mrs. Edward G. McDougall, Mrs. Clara K. Meyer, Edward Michalko, C. H. Olmsted, Edward Rothschild, H. E. Seyfarth, Raymond M. Sheridan, Stanley L. Shetler, Mrs. William Somerville, Dr. Henry A. Szujewski, Gerard E. Waters, George J. Zelinko

ORIGINS OF YULE CUSTOMS PRE-DATE THE CHRISTIAN ERA

By CHRISTINE TARDY
BULLETIN STAFF WRITER

WHAT WE ARE today is, in a sense, the result of everything that's gone before. We are the product of hundreds of millions of years of biological evolution plus a few thousand years of cultural and social developments. Biologists recognize the continuing thread of evolution in physical characteristics because all creatures possess vestigial reminders of their more primitive ancestors. Similarly, anthropologists find traces of ancient

Until eecent times, remote areas of the British Isles witnessed the mysterious processional of the horse's skull at every winter solstice celebration. Probably of ancient Celtic origin, a part of this rite gave us the wassail bowl for holiday festivities.

customs in the things we do today. Customs do not begin suddenly either, but are ours through a long course of evolution.

Because the holiday season is almost upon us, let's look into the past to find the beginnings of our beautiful and happy customs of this time of year. We can be fairly sure that our New Year's observances did not simply spring into being with the acceptance here of the Gregorian Calendar back in 1752 and that Christmas customs did not take form suddenly in celebration of the birth of Jesus. Since there is long evolution behind everything we do, it should not surprise us to find that these modern Christian ceremonies of ours have their roots in pagan ceremonies. After all, the history of man is measured in thousands of years and the history of Christianity only in hundreds.

Of course, even where we have carried a practice unchanged through the centuries, such as the hanging of mistletoe, we no longer do it for the same reason the ancients did it. We don't need to—times have changed. The forces and factors that bring about changes in our physical environment always require an adjustment in our attitudes and customs, and it takes time—often hundreds of years—for our established ways to change. So today's traditions—modified from customs of the past—while they no longer serve their original vital functions, contribute much of the color, interest, and pleasure we derive from life.

DISPUTES ON DATE

The origins of many of our Yule customs can be traced back into prehistoric times, but as official Christian holidays, Christmas and New Year's had a long struggle to become established. Even today, December 25 is not observed as Christmas everywhere in the Christian domain. Armenia and other countries celebrate it on January 6, the Epiphany or spiritual birth of Jesus. In the early days of Christianity there was considerable controversy over whether the physical or the spiritual birth should be commemorated, and those who agreed on the physical birth then disagreed about the date, some holding that it took place on March 25 while others insisted it was December 25. Five hundred years passed before agreement was reached in the Roman church and Christmas was officially celebrated on December 25.

It happens that the origins of many Christian ceremonies were closely bound up with the political situation in Rome at the time. In those early days, Christians were recruiting support from the Roman people, who were, of course, pagans. The Christians met with stiff opposition from the ruling classes of the empire, whose status was jeopardized by the concept of brotherhood of man. But they also had trouble with a rival religion, Mithraism, that was making its appeal to the same people. Mithraism was a Persian religion possessing many concepts similar to those in Christianity and therefore was a dangerous rival. To gain a following among the Roman people, the adherents of both religions realized they had to cope with the fact that their ideas were strange and foreign to the Romans and that for acceptance the new creeds would have to acquire an aura of the familiar.

The Romans had an important festival, Saturnalia, toward the end of December, and the followers of Mithraism had an established ceremony at the same period to celebrate the birth of the sun. Thus Romans swinging to the Mithraic faith would not be deprived of a much-enjoyed happy festival. Consequently, the Christians deemed December 25 a good time for a joyous Christmas festival.

PRE-CHRISTIAN CEREMONIES

Christianity not only offered a competing festival, but made it just as happy an occasion as the Romans had in Saturnalia largely by adopting some of the Saturnalian customs. Saturnalia was originally, in very early Roman religion, a one-day festival commemorating the Golden Age of the rule of Saturn, god of agriculture and bringer of culture to the Romans. It was a solstice ceremony, connected with the turning of the year, when prayers and offerings were given to bring about good crops and prosperity in the coming year. At its height, after Caesar's reform of the calendar, when the Christians first came on the scene, it had been stretched out to five days, including one just for children. During these holidays, gifts were made of wax fruits, candles, and dolls. There is evidence to suggest that the giving of dolls may then have a remnant of the custom of human sacrifice, but it happens also that the dollmakers held an annual fair at this time. The wax fruits symbolized the wished-for bountiful harvests of the coming year, and candles had to do with the making of new fires customary at the solstices, when the sun turned northward again.

A king, Saturn, was chosen to reign during the festival. In very early Roman times this king could do anything he wished, enjoying himself to the fullest during the festival, and at its close he was sacrificed to the god. By Caesar's time human sacrifice was a thing of the ancient past, but a king continued to be chosen to supervise the merriment of the festival.

England, France, and other European countries today carry a vestige of this ancient

During Saturnalia, the Roman people spoofed everything. Men and women exchanged costumes or walked about in their underwear. The happy mood of this festival time and many of its customs, such as gift-giving, influenced our own holiday customs.

ceremony in the Lord of Misrule elected to preside over the Feast of Fools on January 1. At its height during the Middle Ages, this custom permitted the Lord of Misrule to command all manner of ridiculous doings in his direction of Christmastide revels. In

Scotland he was known as the Abbot of Unreason, in France as the Abbé de la Malgouverné.

The thing that stamped the old Roman Saturnalia with carefree gaiety was the fact that everything customary during the rest of the year was either forgotten or reversed. Schools were closed, the courts stopped handing down punishments, wars ceased. People either walked about in their undergarments or men and women exchanged garb. Anti-gambling laws were ignored and groups gathered openly to throw dice. Social distinctions were reversed in this slave-holding society, and masters waited on their servants. Manners and actions were unrestricted, which contributed to unbridled speech and licentious behavior to some extent, a characteristic of many fertility ceremonies.

The more serious aspects of Christmas are derived from the winter solstice celebrations of the early northern barbarians, which revolved around the dark ancestral spirits. Just as they had done it in Rome, it was logical and sensible for the early Christians to gain a foothold by easing into the already established customs, adapting them to Christian concepts. So as Christianity spread northward into barbarian territory, elements of Celtic and Teutonic winter-solstice customs were worked into Christmas, which came at the same time of year.

CELTS AND WASSAIL

The Celts penetrated so deeply into the mountainous backwoods sections of the British Isles and the northwestern part of the Continent and they did this so long ago (close to 2,500 years) that they had a long time, undisturbed by any significant outside influences, to develop highly individual interpretations of the old rites. These old druid-cult ideas have helped to mold our modern Christmas customs. As has been mentioned, the undertone of all the northern peoples' winter-solstice rites had to do with the mysteries of life and death, mainly the latter.

In County Cork until recently, and derived from ancient druid rites, it was the custom to usher in winter (Samhain) by lighting bonfires (for the same reasons the Romans gave candles) and to go from house to house to solicit contributions of coin and food, led in a procession by a man called the "White Mare" (Lair Bhan) who wore a white robe and carried a rude representation of a horse's head. Peat fires in the cottages were put out, to be freshly lighted in the morning, and gifts of food were left for the "little people" who were thought to wander abroad excessively on that night.

In Wales, the Brythonic-speaking branch of Celts had their own variation on this during the Christmas season, called Y March (the Horse) or Y Warsel (the Wassail) or Mari Lwyd (which can mean either Gray Mare or Holy Mary). Again, a leader carried a horse's skull or wooden imitation, draped himself in a sheet, and led the whole party from house to house to receive gifts and drink from the wassail bowl.

THE TEUTONIC YULE FEAST

The Yule Feast of the Nordic Germanic-speaking peoples in Scandinavia and north-central Europe had many things in it similar to the Celts' winter celebrations. Like the Romans, the Teutons were concerned with recognizing the winter solstice and bringing about a bountiful new year, but fear of spirits and attention to the departed gave the ceremonies a serious countenance like that of the Celts.

The burning of a huge Yule log for several days started in ancient times with a purpose akin to the sun-fire associations found in the Roman giving of candles and in the Celts' lighting of bonfires, with the idea of starting the new year with a new fire. In parts of the north, it was (and is still in some places) thought that burning the log or keeping a bit of it around the house all year would protect the house against fire and lightning, and that it would insure bountiful crops and make the livestock fruitful.

The Christmas tree, incidentally, is a recent thing, spreading from the Germans only in the last century and a half, but it may have been inspired by the May-tree worship of the Celtic druids. Lights on the tree may come from the Jewish Hanukkah (the Feast of Lights) held at this same season. When Jesus was born the neighboring houses were probably bright with Hanukkah lights. Or there may be an affinity here with the lights and fires of the Romans, Teutons, and Celts.

Mistletoe has been regarded from earliest times as sacred and mysterious, possessing powers of life and fertility, by peoples from the Mediterranean to the Baltic. It was Aeneas' famed Golden Bough (the berries turn gold-tinged as the plant withers). It was particularly holy to the ancient Celtic druids, for it grew on the sacred oak, and its use is definitely linked to various old European sun-cults. It is still credited with magical powers in parts of the world, from the Louisiana bayous where it is hung to counteract the powers of conjurers, to European cottages where it is hung over doors to prevent the entrance of witches. Our use of it today stems from a time when it played an important role in fertility rites of the ancient Celts.

Our use of mistletoe during the holidays has changed somewhat from the time it first acquired its holy and magical functions in the rites of the ancients. Most of us no longer use it to ward off demons or witches, but we do retain a remnant of the idea behind its old use in druid fertility rites.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

From the *Annual Report of the Director* for the year 1902:

"Expeditions and Field Work.—The collection of an adequate representation of the forest trees of the United States that bear particularly upon commerce and the deforestation of the country that was begun several years ago and lapsed for the last three years on account of lack of time with the then working force of the Department of Botany has again been taken up, three weeks being spent in northern Minnesota for this purpose. Incidental to this work, other collections of economic material were made in the same locality. The Department has continued its field work upon the plant life of the 'Lake Chicago Basin,' a flora that is rapidly becoming extinct from drainage and reclaiming of the area for building and other purposes. During the year 388 specimens have been added to the already fine series representing this interesting region."

* * *

(*Virginia Deer in Winter, one of the "Four Seasons" groups prepared fifty years ago by the late Carl E. Akeley, is shown on the cover of this* BULLETIN. *The exhibit may be seen in Hall 16, Richard T. Crane, Jr., Hall of American Mammals.*)

DALLWIG'S SUNDAY TOPIC IS DOLLARS FROM TREES

Contrary to what almost everyone else will tell you, "Money *Does* Grow on Trees," says Paul G. Dallwig, the Museum's Layman Lecturer, and that is the title of the five talks he is to give at 2 P.M. on Sunday afternoons in December.

In this lecture Mr. Dallwig tells the interesting story of the development and conservation of our great American forests.

Members of the Museum may use their membership cards to attend these lectures without advance reservations.

Museum Closes on Two Holidays

On Christmas and New Year's Day the Museum will be closed so that employees of the institution may spend the holidays with their families. These are the only days in the year when the Museum is not open to visitors.

GULF OF MEXICO FISHES TO BE COLLECTED

An expedition to collect deep-sea fishes of the Gulf of Mexico on a triangular cruise of some 1,500 miles from Pascagoula, Mississippi, to Dry Tortugas in the Florida Keys and then down to Banco Campeche along the north coast of Yucatan, Mexico, was scheduled to get under way at the time this BULLETIN went to press.

Through the courtesy of the United States Fish and Wildlife Service, Loren P. Woods, Curator of Fishes, and Robert F. Inger, Assistant Curator of Fishes, were invited to act as scientific observers aboard the service's motor-vessel *Oregon*, which was to sail November 28 on a survey of new shrimp grounds. The trawling to be done will yield many specimens of varied kinds of fishes, most of which will be available to Woods and Inger for addition to the Museum's research collections.

Photo courtesy Fish and Wildlife Service

SHIP SERVES SCIENCE

The "Oregon," research ship of the Fish and Wildlife Seevice, uncovers many secrets about life in the depths of the sea.

This is the third expedition of the kind in which Curator Woods has been enabled to participate through the co-operation of the Fish and Wildlife Service. The two previous cruises aboard the *Oregon* resulted in the acquisition of about 300 species of fishes, about half of which were not previously represented in the Museum's collections. Drags on the present cruise will probably range from depths of 30 to 100 fathoms.

The *Oregon* is a large converted tuna clipper with full equipment for scientific collecting. She has a large double trawling-winch, carrying enough cable for use at depths to 500 fathoms, and electronic devices.

Daily Guide-Lectures

Free guide-lecture tours are offered at 2 P.M. daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

Although there are no tours on Sundays, the Museum is open from 9 A.M. to 5 P.M. (4 P.M. on weekdays). The Museum will be closed Christmas and New Year's Day.

'ANIMALS UNAWARE' FILM AND LECTURE OFFERED

The Illinois Audubon Society will present the second in its current season of "screen-tour" lectures on Saturday afternoon, January 3, at 2:30 o'clock in the James Simpson Theatre of Chicago Natural History Museum. Howard Cleaves will lecture and show color motion-pictures on "Animals Unaware."

Admission to these lectures and others to follow in March and April is free and the public is welcome. Seats in the reserved section of the theatre are available both to members of the Illinois Audubon Society and of the Museum upon presentation of their membership cards to the ushers.

GIRL SCOUTS AT MUSEUM HONOR UNITED STATES' WAR DEAD

Approximately 900 Girl Scouts and their relatives and friends attended an Armistice Day ceremony at the Museum on November 11. The girls who participated are members of troops engaged in their current "Nature Study Project" in which the Museum is the center of activity for Girl Scouts of Chicago, five neighboring Illinois counties, and one county in Indiana.

On Armistice Day the Girl Scouts assembled in the south end of Stanley Field Hall. Major Frank A. Reker, Jr., conducted the ceremony, speaking from the first landing of the steps leading to the balconies. After colors were posted by a Girl Scout color guard, Major Reker introduced Colonel Clifford C. Gregg, Director of the Museum, who spoke a few words of welcome and introduced Howard T. Greene, who made a brief address. Mr. Greene, president of Brook Hill Farms, Inc., of Chicago and Genesee Depot, Wisconsin, is the sponsor of the Girl Scout nature-study project.

At 11 o'clock all faced east in accordance with Armistice Day custom, while a Girl Scout drum and bugle corps directed by Mrs. Frank A. Reker., Jr., played taps accompanied by muffled drums.

The nature-study project has attracted widespread interest. Brook Hill Farms will award a Girl Scout American flag to each of the 100 troops whose letters are judged to be the best. The awards will be made at a meeting to be held in the James Simpson Theatre of the Museum on December 6.

GIRL SCOUTS AT MUSEUM ON ARMISTICE DAY

Drum and Bugle Corps of Girl Scout Troop 572 and Flag Troop 22 participate in solemn Armistice Day ceremony in Stanley Field Hall. More than 950 Girl Scouts attended and were welcomed by Howard T. Greene, president of Brook Hill Farms, Inc., who appears on stair landing used as speakers' platform. Mr. Greene is sponsor of the current "Nature Study Project" for Girl Scouts in which the Museum's facilities are used by troops throughout the Chicago area and neighboring counties of Illinois and Indiana.

'WHY I FELL IN LOVE WITH MEXICO' TOLD BY EXPLORER

By CLIFFORD H. POPE
CURATOR OF AMPHIBIANS AND REPTILES

ALTHOUGH zoologists learned during the 19th century and the early 20th much about the reptiles and amphibians of Mexico, it was not until the last two decades that they could boast a superior knowledge of this subject. This recent advancement has been due largely to the work of two indefatigable explorers, Edward H. Taylor and Hobart M. Smith, who, during the '30s and '40s, collected about 50,000 specimens while making seventeen expeditions to Mexico. For example, well over half of the species of salamanders of this country have been described by these workers since the late '30s.

This bit of Mexican zoological history is interesting because it is typical of that of many other parts of the world: a gradual accumulation of knowledge for decades followed by a sudden increase due to some special stimulus in the form of a large expedition, or the efforts of a few men especially interested, as are Smith and Taylor. It should be recalled in this connection that all true zoological exploration is extremely recent. From the point of view of modern science, the animals and plants of the world were almost totally unknown a century and a half ago.

Now that the work of Smith and Taylor has brought our knowledge of Mexican herpetology to such a level, the stage is set for the specialist in classification, ecology, speciation, or any related branch of study, to step in and concentrate on a particular field. My wife and I went to Mexico last June with a plan to investigate the relationships of one species to another under natural conditions, with salamanders as a focal point of interest.

Before relating our experiences I might as well make one confession: I am prejudiced in favor of Mexico and its inhabitants, and shall continue to be so until something happens to induce me to change my mind. So far our experiences have been overwhelmingly of the pleasant kind. During three and a half months of work, and travel over 8,500 miles in seventeen states and Distrito Federal, we have met with courtesy and consideration from hundreds of persons whom we encountered without introduction, and the times we have been treated discourteously can be counted on the fingers of one hand. And we did not travel as tourists with money sticking from all pockets, but as workers who often did things without apparent reason. For example, we went through innumerable fields turning stones and other objects, and yet no farmer objected to such unusual behavior. We had many a pleasant conversation with land-owners who surely puzzled over our actions. I have often thought what kind of a welcome a foreigner would receive in our country if he did what we have done, and it is not a pleasant thought. I was warned that we would be molested or robbed but we were not. Our obviously loaded Chevrolet "carryall" has been left over night in city streets or for hours in towns, villages, and remote places in the country.

TEMPORARY HEADQUARTERS FOR SALAMANDER HUNTER

Cofre de Perote in the state of Veracruz, as seen from patio occupied by Curator Pope while collecting specimens of the area's amphibians. A turkey gobbler struts in the foreground. The Cofre, one of Mexico's highest mountains, attains an altitude of 14,048 feet; this photograph was taken at about 4,600 feet above sea-level.

We made our first real headquarters at Jalapa, capital of the state of Veracruz and historic site on one of the two highways connecting Mexico City with the Gulf port of Veracruz. Jalapa, with an altitude of 4,681 feet, was an important stop on the northern stagecoach road, for here the traveler could spend the night in cool mountain air after sweltering in the tropical plains below. This elevated location makes Jalapa as interesting to the biologist as to the traveler because the surrounding country supports a rich flora and fauna. By going a few miles up one road you get into the temperate zone, and by going as far down another you reach the tropics.

A glance at a relief map will show that Jalapa lies near the base of the Cofre de Perote, one of Mexico's highest mountains. The Cofre's top, 14,048 feet above the level of the sea and only fifty airline miles from it, is elevated enough to wear a white cap occasionally in the summer. The famous lofty peaks of our own western states are scarcely higher than this little-known mountain. Forty-five miles to the south, joined to the Cofre by a continuous range of mountains without highways, towers snow-capped Orizaba, unsurpassed in grace and beauty among North American peaks, and higher than any south of the Alaskan boundary. Its altitude is a mere 18,696 feet.

A DOG APPEASED

Since the problem of a place to live is always the first to be solved, we set about finding an abode. Camping is not advantageous in such a rainy, heavily populated area, and living in hotels is even less appealing. After some difficulty we found a room to rent in a home on the outskirts of Jalapa. The room was located between a large garden and larger patio or barnyard in which lived a horse and innumerable domestic fowl of many kinds, and several dogs. One dog attacked strangers at sight; so entering the patio where we parked our car was often venturesome. The problem of this ferocious bitch was solved by a little raw meat and our table scraps. We were soon on the most friendly terms. The charming owner of our abode saw to it that we had everything needed before turning us over to the affectionate care of her many servants. The house, garden, and patio occupied perhaps three acres, and their care called for much labor.

It was not hard to get an early start in the morning because long before daylight a series of noises began: ringing of church bells, barking of dogs, crowing of roosters, and, finally, blowing of bugles and beating of drums by the local soldiery, who marched along the street in front of the house at 5 A.M. every day. I must admit that toward the end of our sojourn even this pandemonium sometimes failed to wake me. Then often

there was excitement during the daylight hours as when three-year-old Guadalupe, smallest member of the household, decided to teach the biggest of the dogs some manners. He bent over in front of the big dog to take a bone from it for one of the little dogs. The result was a long tooth gash on his head, a bloody white shirt, and howls that dwarfed all the barnyard noises. We were called upon to assist with first-aid treatment and it was not long before "Lupe" was happily sucking some candy. More exciting still was the pursuit about the patio of an alleged mad dog. The weapons used were, in order of effectiveness, a floor mop, a stick, stones, a pitchfork, a machete, and a large pistol. Only Lupe failed to join the attackers. The agility with which the dog evaded his pursuers cast some doubt on his madness. The event occurred during a typical mad-dog "scare."

With headquarters from which to operate we next established stations in the surrounding country. These were within some twenty miles of Jalapa, and could be reached for a day's work at a time. One of the stations was a hacienda that included a stretch of open pasture with small streams and wet, grassy spots; two were in barrancas or canyons down which roared mountain streams. These barrancas were at such different altitudes that they supported different faunas. Even the patio itself, with its partly overgrown lower slope, and innumerable boards, stones and debris lying about, had its herpetological fauna, and a large colony of salamanders inhabited the hill opposite ours, bare and open as it was. First one station was visited for a day and then another. In this way we were able to observe the stations at different times of day and under various weather conditions.

FRIENDLY 'MUCHACHOS'

Our most successful work was done in two adjacent barrancas about 3,000 feet higher than Jalapa and fifteen miles distant by road. On our first visit we found the ruins of an old church in a pasture near the canyon's mouth, and among the ruins and nearby stone walls and rocks we discovered a large population of lizards and snakes. The inevitable "muchacho" or boy was there in his picturesque costume watching his cows and of course he soon became interested in helping us. Mexican farm boys always show up and are one of the characteristics of the country districts. I could write a whole essay on them. They seem to spring up from nowhere, and making friends with them is not hard, especially when a little candy is handy. As a rule they answer all questions respectfully with either a "Si" or a "No" until convinced that you want a full answer. I recall one who stood by while we ate lunch, and when asked whether he wanted this or that invariably replied, "Como no," which is to say, "How not." Each morsel, after being carefully examined as to consistency, was, if dry and firm, carefully deposited in one of many pockets; if soft or sticky it was eaten at once. The boy reminded me of a huge, friendly chipmunk.

The local people of all ages take a great interest in what goes on and can be most helpful. A goatherd whom we met farther up one of the two barrancas saw us catching salamanders and responded to our offer to buy any by promptly disappearing. Two hours later he returned with seven specimens wrapped in a large leaf. In the meantime we had caught some of the same species under the bark of a pine log. The goatherd assured us that his had been caught in a tree, and offered to take me to his collecting site. Sure enough he had found his series by climbing a tree, throwing down the bromeliads or air-plants growing some twenty feet above the ground, and searching through them. Thus we were shown for this species a "habitat niche" new to us.

We worked six days in these canyons during which time many notes on habits were recorded and 450 specimens assembled. We

'MUCHACHO' AND TURTLE

This Mexican lad shows with delight a specimen found near his home at Miguel Hidalgo, Tamaulipas.

felt that we had secured representatives of all the species but of course we had not done this in such a short time. The villagers had helped and it was always interesting to compare our catch with theirs. They had the advantage of superior knowledge of local conditions, whereas we knew the scientific aspects of the work. It usually turned out that their collections supplemented ours remarkably well.

After leaving Jalapa we continued our circuit of the Cofre de Perote–Orizaba range until we reached the region just south of it, where we found an even richer fauna. We were able to visit briefly many famous collecting sites in the region of Córdoba.

The principal groups of mammals of the world from the monotremes (egg-laying mammals) and marsupials (pouched mammals) of Australia to the highest types (monkeys and man-like apes) are systematically arranged in Hall 15.

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including an allowance for postage are promptly filled.)*

FOREST ENTOMOLOGY. By Samuel A. Graham. Third Edition. McGraw Hill Book Company, New York, 1952. xii+351 pages. 85 figures. Price $6.

Forest Entomology is a somewhat technical textbook and will not have the reader appeal of some of the more general works that have been reviewed here. Nevertheless, it is worthy of note because of the interest it will have to BULLETIN readers who are interested in the conservation of natural resources. To them the book will be a valuable reference, as are others of the "American Forestry Series."

Many changes have occurred in the field of forest entomology since the last edition (1929) of this text. Whereas the control of forest insects previously was largely a matter of good silvicultural practices—and these still are very important—the development of some of the modern insecticides and insecticide dispersal equipment have made the direct chemical control measures much more practical than before. The techniques of survey and appraisal have likewise been greatly improved, with the result that potential outbreak areas now are much more likely to be recognized in advance and taken in hand before serious insect outbreaks can occur.

Although this valuable book is specifically one of a series on North American forestry, it would seem to the reviewer that even brief references to the problems of forest entomology in other parts of the world would help broaden the viewpoint of the reader and, particularly, of the student.

RUPERT L. WENZEL
Curator of Insects

BOYS AND GIRLS OF 4-H TO VISIT THE MUSEUM

In accordance with a custom established many years ago, more than 1,200 boys and girls of the 4-H Clubs, national farm-youth organization, are scheduled to visit the Museum on December 2. The Raymond Foundation will assign its staff lecturers to assist the young people in finding exhibits.

Nearly every state in the Union and all the provinces of Canada will be represented by groups of delegates. Rural boys and girls, selected for excellence of achievement in their local communities, are sent to Chicago each year for the National Congress of 4-H Clubs at the time of the annual International Livestock Exposition.

TOYS OF OTHER PEOPLES AND PAST AGES IN MUSEUM

Photographs courtesy of United Press

Playthings given to children of many lands are to be found among the Museum's anthropological collections. In picture at left, young Miss Nicky Borch, of Beewyn, Illinois is shown in Indian costume as she posed, for a press photographer, holding a toy papoose-cradle. On the table, for comparison, is a modern doll-cradle such as is to be found on the toy counters of stores during the Christmas shopping season. Babies' rattles at least 3,000 years old are shown in ancient Babylonian exhibit (Hall K). Held in front of the case for comparison is a modern version of the toy that pacifies infants with its mysterious and pleasant sound.

GIFTS TO THE MUSEUM IN PAST MONTH

Following is a list of the principal gifts received during the past month:

Department of Anthropology:

From: Robert Trier, Chicago—3 archaeological and 5 ethnological specimens, Marquesas, Samoa, and Tonga

Department of Botany:

From: Dr. Nicolas Angulo, Trujillo, Peru—18 algae, Peru; Botanic Gardens, Sydney, Australia—29 algae, Gilbert Islands, Micronesia; Botanische Abteilung, Vienna, Austria—1,034 algae; Canterbury Agricultural College, Christchurch, New Zealand—*Raoulia exemia*, Mount Torlesse; William A. Daily, Indianapolis—54 algae, Indiana; Dr. Anna de Toni, Brescia, Italy—111 algae, Albania and Gorizia; Florida State University, Tallahassee—90 algae, Florida; University of Hawaii, Honolulu—55 algae, Hawaii; Dr. E. P. Killip, Washington, D.C.—71 algae, 17 phanerogams, Florida; J. Francis Macbride, Stanford University, Calif.—732 algae, southwestern United States; Mahogany Association, Inc. (George H. Lamb), Chicago—5 mahogany planks, Philippine Islands; Missouri Botanical Garden, St. Louis—35 miscellaneous algae; University of Nevada, Reno—59 algae, Nevada; Dr. C. M. Palmer, Cincinnati—37 algae, Ohio; Dr. P. O. Schallert, Altamonte Springs, Fla.—155 cryptogams, Florida; Southern Illinois University, Carbondale—*Juniperus drupacea*, Turkey; Dr. Cesar Vargas, Cuzco, Peru—16 algae, Peru; University of Wisconsin, Madison—60 miscellaneous lichens

Department of Geology:

From: August G. Becker (*deceased*), presented by Raymond B. Becker, Gainesville, Fla.—five geodes, various localities; R. Bookwalter, Chicago—fossil tree-trunk filled with quartz crystals

Department of Zoology:

From: William J. Beecher, Chicago—3 screech owls, Illinois; Bernard Benesh, Burrville, Tenn.—100 insects (chiefly flies), Tennessee; Dr. Argentino A. Bonetto, Santa Fe, Argentina—fresh-water clams, Argentina; Department of Conservation, Cornell University, Ithaca, N.Y.—60 sea lampreys, New York; Harry Hoogstraal, Cairo, Egypt—78 insects, 6 arachnids, desert snails, 42 frogs, 31 lizards, 20 snakes, turtle, Egypt; Marine Studios, Marineland, Fla.—fishes (*Centropristes striatus*), Florida; Max McGraw, Dundee, Ill.—albino chipmunk, Illinois; J. D. Romer, Hong Kong, China—4 frogs, Hong Kong; Dr. Otto Schubart, São Paulo, Brazil—collection of fresh-water shells, Brazil; Neal A. Weber, Swarthmore, Pa.—2 frogs, 42 lizards, 2 snakes, Iraq and Bahrein Island

Library:

From: Henry S. Dybas, Hazelcrest, Ill.; W. R. Shealy, Jr., Chicago

STAFF NOTES

Dr. Austin L. Rand, Curator of Birds, was the representative of the Museum at the annual meeting of the American Ornithologists' Union in Baton Rouge . . . **D. Dwight Davis,** Curator of Anatomy, attended the recent regional meeting of anatomists at the University of Wisconsin.

Dr. Hugh C. Cutler, Curator of Economic Botany, attended a recent meeting in Washington, D.C., of the National Research Council's committee on the preservation of indigenous strains of maize.

Dr. Sharat K. Roy, Chief Curator of Geology, and **Robert K. Wyant,** Curator of Economic Geology, recently visited Yerkes Observatory, Williams Bay, Wisconsin, to attend a symposium on the abundance of elements from meteoritic and terrestrial sources.

Two Museum Curators Honored For Zoological Research

The honorary degree of Doctor of Science has been conferred upon Karl P. Schmidt, Chief Curator of Zoology, by Earlham College, Richmond, Indiana, in recognition of his years of research in various fields of zoology, most notably in herpetology. Chief Curator Schmidt is one of the foremost authorities on reptiles and amphibians.

Emmet R. Blake, Associate Curator of Birds, was recently elected a fellow of the American Ornithologists Union at its annual meeting held in Baton Rouge, Louisiana. The fellowship is a recognition of Associate Curator Blake's extensive contributions to neotropical ornithology.

HOW TO DO YOUR CHRISTMAS SHOPPING WITHOUT STIRRING FROM YOUR EASY CHAIR

Christmas shopping can be made painless and economical. You don't even have to wrap a package if you avail yourself of one or both of the special services Chicago Natural History Museum offers at this time of the year. Here are the details:

(1) Christmas Gift Memberships

Send to the Director the name and address of the person to whom you wish to give a Museum membership, together with your remittance to cover membership fee (see enclosed Christmas gift membership order form).

An attractive Christmas card will notify the recipient that through your generosity he has been elected a Member of the Museum. He will receive also his membership card and information on membership privileges.

(2) Museum Book Shop Gifts

Books endorsed for scientific authenticity by members of the Museum staff are on sale in the BOOK SHOP. The selection is for both adults and children.

When desired, the BOOK SHOP will handle orders by mail and telephone (WAbash 2-9410). It will undertake all details of wrapping and dispatching gift purchases to the designated recipients, together with such personal greetings as the purchaser may specify, charging only postal costs.

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